...OGY DEPT.

MODERN PACKAGING

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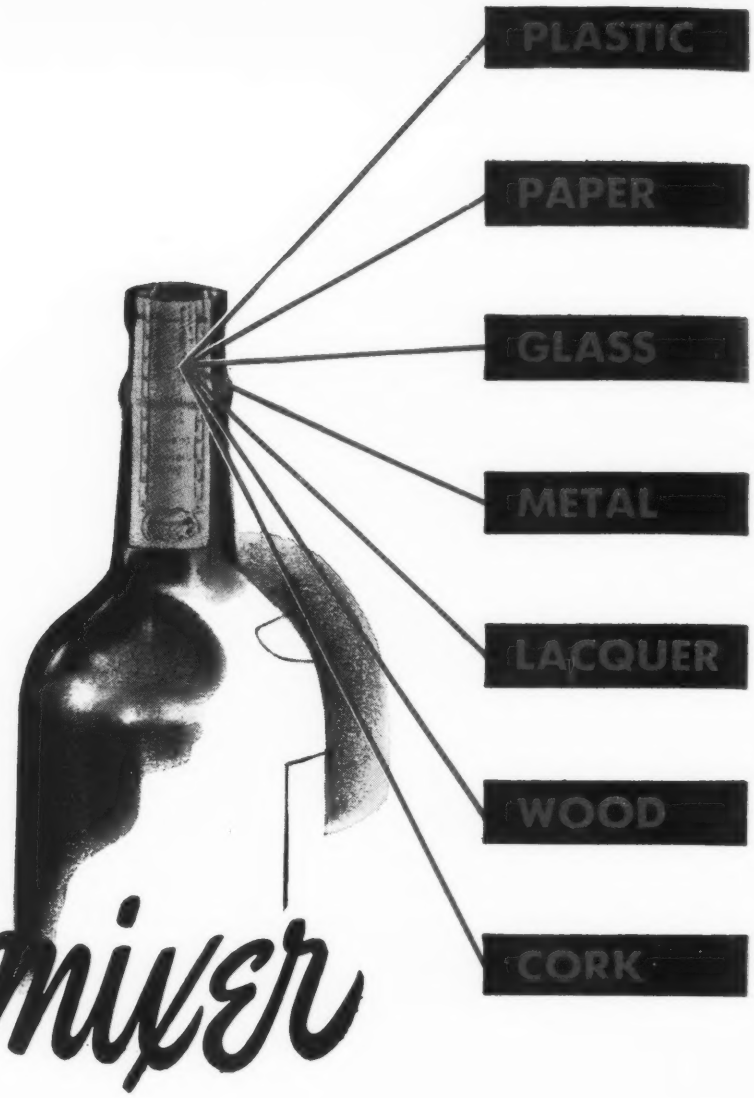
June 1945

When an adhesive must be *a good mixer*



Rely on National's application research for an adhesive to give you a positive bond on a wide variety of surfaces.

Take any combination of surfaces – plastic, paper, lacquer, metal, cork, or what have you. Vary them with each lot of bottles being stamped. Vary the bottle shape, glass, condition. Then adhere a revenue stamp to all with a *single* waterproof adhesive . . . a very versatile adhesive . . . a good mixer!

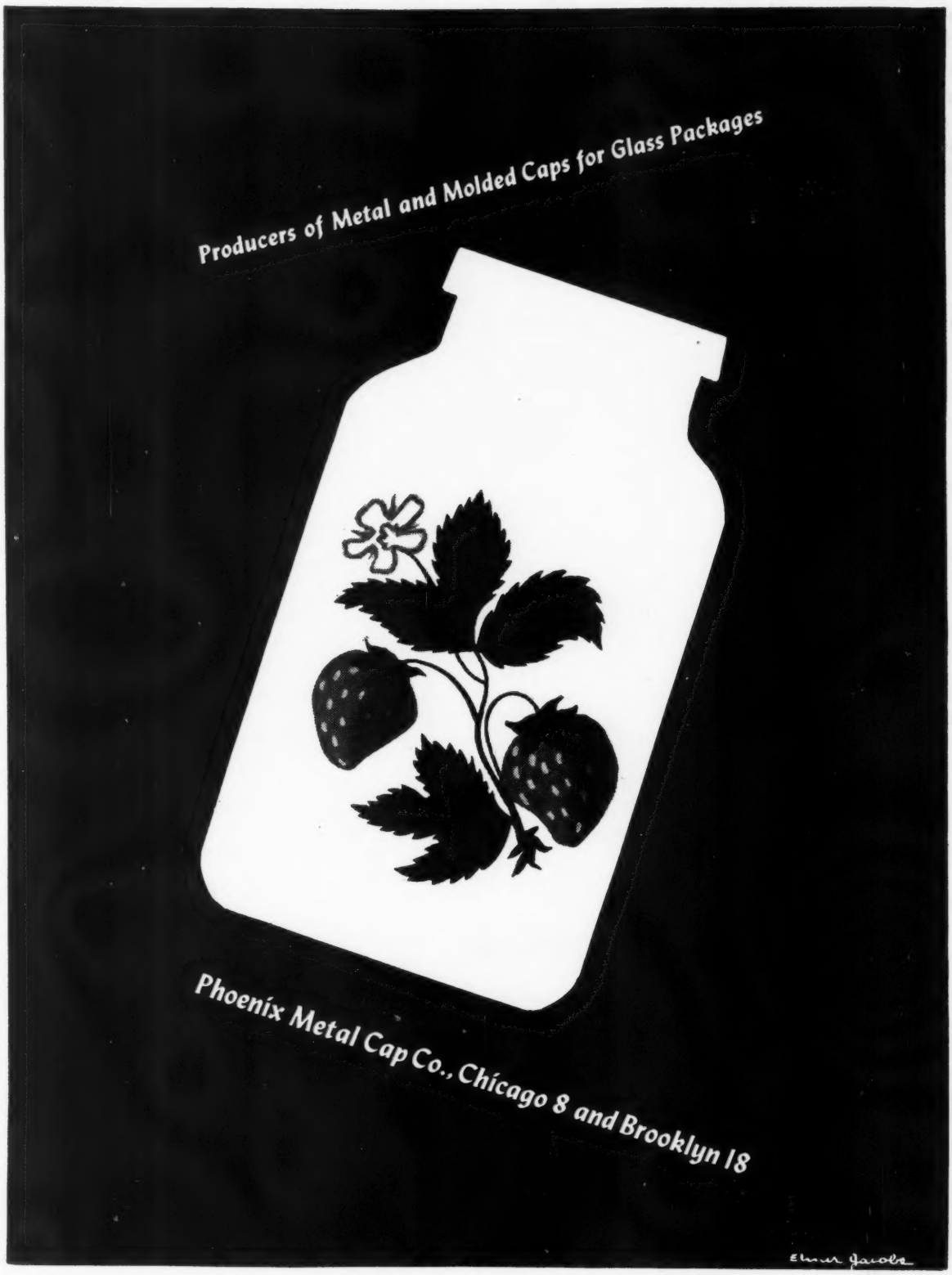
National's strip-stamp adhesive does just such a difficult surface variety job. Yet it's only *one* of National's large family of resin adhesives. *Another* is providing water-resistant label protection to pyramiding supplies on the Western Front. *Still others* are bonding everything from lampshades to luggage and bomb rings to bandage boxes. *All* are performing difficult jobs – successfully.

Whatever your specific combination of conditions may be – the surfaces, application methods, field considerations – National as a pioneer in industrial as well as laboratory research, can simplify and speed-up your regular run of work and meet new problems as they arise. Your inquiry is invited – NOW!

Offices: 270 Madison Avenue, New York 16; 3641 South Washtenaw Avenue, Chicago 32; 735 Battery Street, San Francisco 11, and other principal cities.

National ADHESIVES

EVERY TYPE OF ADHESIVE • • • *FOR EVERY TYPE OF ADHESION*


Producers of Metal and Molded Caps for Glass Packages
Phoenix Metal Cap Co., Chicago 8 and Brooklyn 18
Elmer Jacobs

MODERN PACKAGING

VOLUME 18 JUNE 1945 NUMBER 10

★ ★ ★

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COVER—For this month's cover Peter Piening chose the graceful classic shapes of glass bottles for a design of pure form and color.

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All editorial contents bearing on military subjects have been approved for publication by the Armed Services.

MODERN PACKAGING is regularly indexed in the *Industrial Arts Index.*

Member of Audit Bureau of Circulations

EXECUTIVE and EDITORIAL OFFICES: Chanin Bldg., 122 E. 42nd St., New York 17. WASHINGTON OFFICE: 625 Colorado Bldg., 14th & G Sts., D. C. 6

Published the 5th of each month by Breskin Publishing Company. Publication office: Twentieth and Northampton Sts., Easton, Pa. Subscription $5.00 per year in United States; Canadian, $5.50; foreign, $6.00. Two-year subscription: United States, $8.00; Canadian, $9.00; foreign, $10.00. All foreign subscriptions payable in United States currency or equivalent in foreign currency computed in current exchange. Price this issue, 50¢ per copy.

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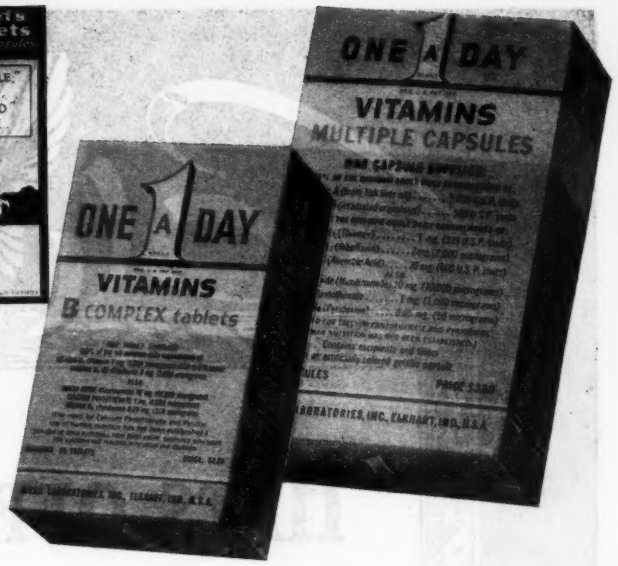
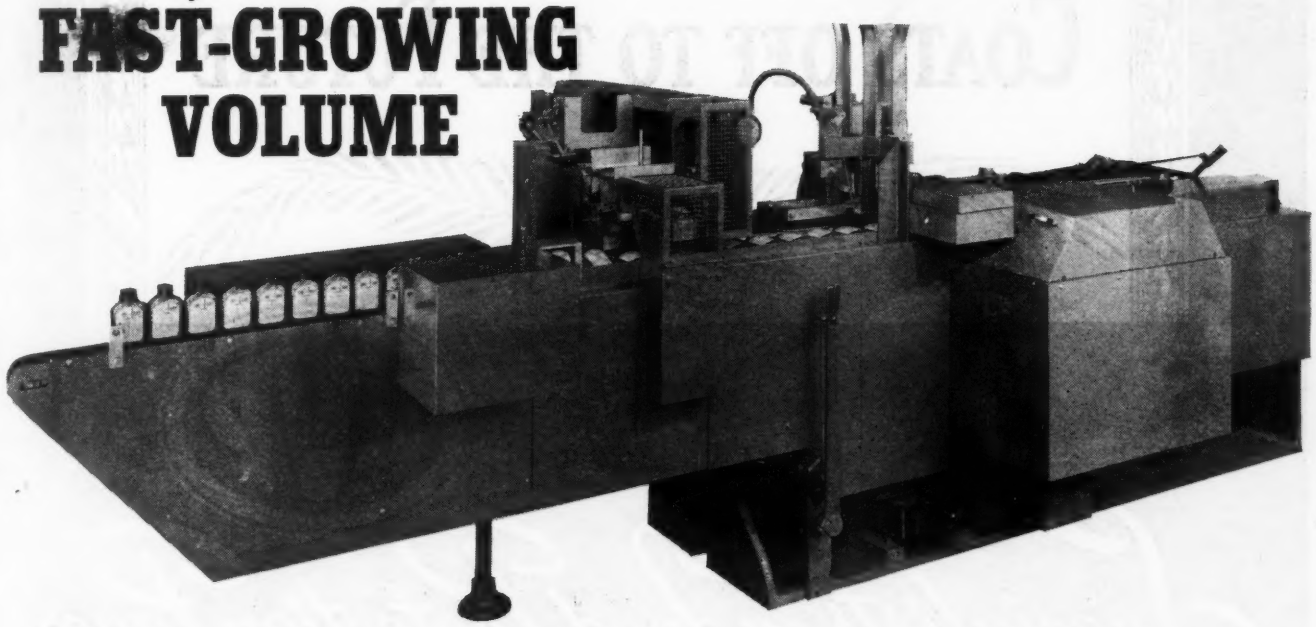
Printed in U. S. A. Acceptance under the Act of June 5, 1934, at Easton, Pa. Authorized October 7, 1936.

ONE A DAY VITAMINS
A and D Tablets
B complex Tablets
MULTIPLE capsules
FOR BOYS OF SIX OR SIXTY-SIX "B-COMPLEX" RINGS THE BELL. GOOD APPETITES AND RESTFUL NIGHTS AND ENERGY AS WELL.
IT'S TRUE THAT WE TAKE "A and D" BECAUSE WE WANT PROTECTION. WE TRY TO KEEP FROM HAVING COLDS AND GUARD AGAINST INFECTION.
IT'S SMART TO TAKE THE "MULTIPLE." WHEN ALL IS SAID AND DONE, AND GET "B-COMPLEX", "A and D" AND "C" COMBINED IN ONE.



Smooth, quiet, efficient CARTONING *. . . geared to* FAST-GROWING VOLUME



Smooth, quiet, efficient operation is the keynote of Miles Laboratories' production system. Everything must operate with *clocklike precision* to keep pace with the fast-growing sales volume of uniquely advertised One-A-Day (brand) Vitamins.

That same smooth, quiet efficiency is the outstanding quality of the *adjustable* Redington Cartoning machine on the job at Miles since 1944. Continuous loading, quickly adjustable—it *automatically* cartons the large and medium sizes of One-A-Day (brand) Vitamins in the B-Complex tablets and the A and D tablets and the Multiple Vitamin Capsules *plus* a circular, with smooth, seemingly effortless speed.

Cartons in collapsed form are stacked in one magazine . . . flat circulars in another. The bottles are brought into the machine standing upright on the intake belt. The Redington machine then places the bottles in the conveyor's pockets . . . *feeds a circular*, folds it three times parallel to the short dimension and places it over the bottle from side to side. Meanwhile the carton is *fed and formed* . . . the bottle-plus-circular inserted—and the carton closed by tucking in the end flaps. A *skip carton device* stops the feeding of cartons into empty pockets.

Still another example of Redington's ability to supply unusually efficient packaging equipment . . . *another reason* why production executives recommend "If it's Packaging—Try Redington First."

F. B. REDINGTON CO. (Est. 1897) 110-112 So. Sangamon St., Chicago 7, Ill.

For Freedom's Sake — Buy War Bonds

REDINGTON

PACKAGING MACHINES

FOR CARTONING • WRAPPING • SPECIAL PACKAGING

FOR THE

MEAT PACKING INDUSTRY

GENUINE VEGETABLE PARCHMENT • WAXED
SPECIAL TREATED • GREASEPROOF

KALAMAZOO VEGETABLE PARCHMENT COMPANY
PARCHMENT • KALAMAZOO 99 • MICHIGAN
BRANCH PLANTS AT HOUSTON, TEXAS AND PHILADELPHIA, PA.

Another application that suggests interesting and important uses in all fields

THAT lovely lady probably doesn't give a hoot what the handbag is made from. But she's surely interested in the fact that it's easy to keep clean because it's waterproof and washable. She likes it because it resists scuffing and wear despite its softness. And she knows that it won't fade or turn yellow even after continued handling.

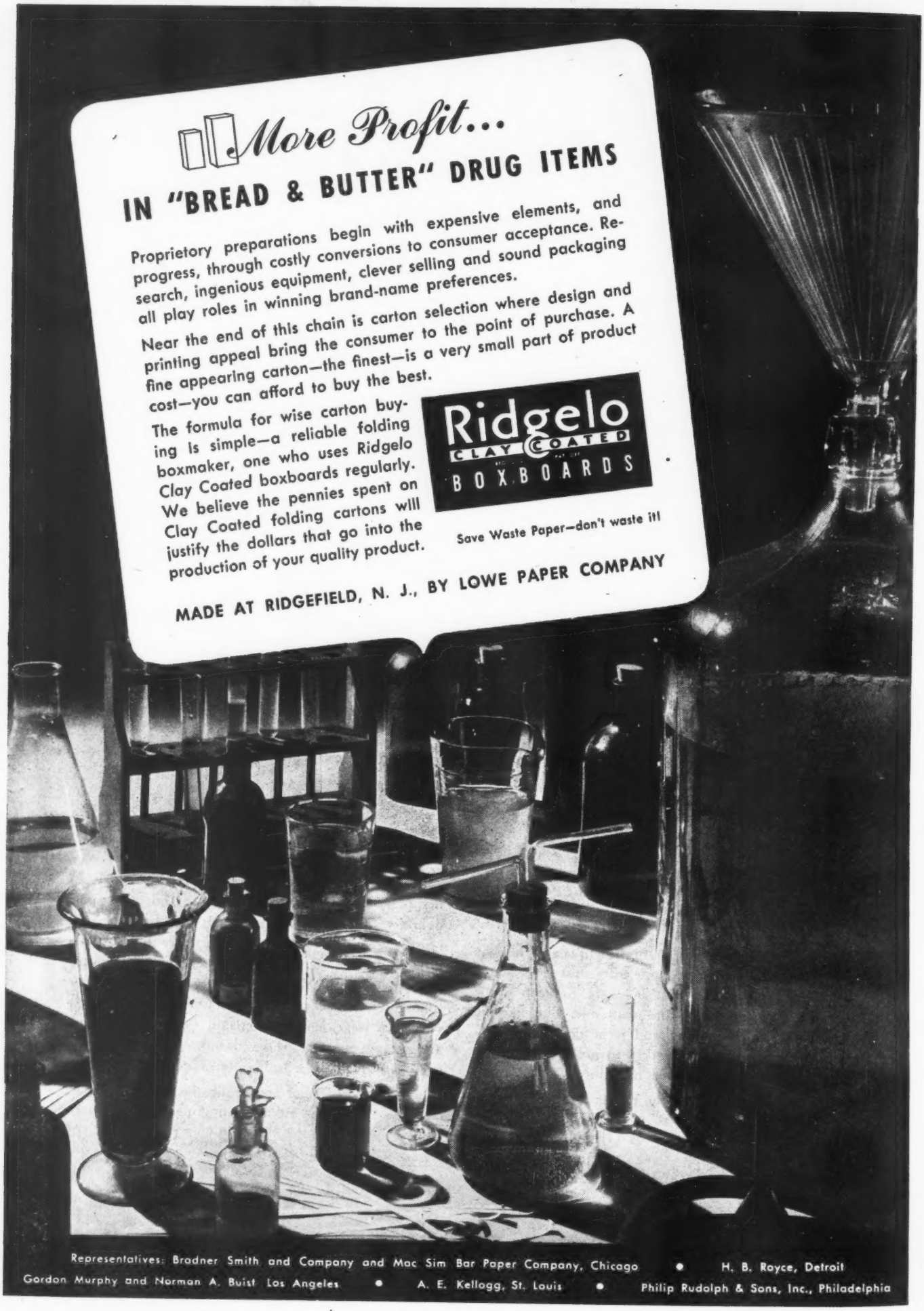
These are just a few of the properties that may be imparted to a finished product through the use of GEON polyvinyl raw materials. And they suggest many interesting and important applications.

For example, you can make scuffproof, good-looking, practically indestructible luggage and brief cases; upholstery material that can be left outdoors because it resists the aging effects of weather; water and mildewproof fabric coatings for rainwear, shower curtains, tents; soles and heels that will outwear leather many times; film, sheet or coatings of GEON for packages that will resist wear, aging, chemicals, foods, tobacco, oils and greases, moisture, heat and cold. All products made from GEON may be brilliantly or delicately colored.

There are applications for GEON in every industry in America. For more complete information write Department LL-6, B. F. Goodrich Chemical Company, Rose Building, East 9th and Prospect, Cleveland 15, Ohio.

Geon
Polyvinyl Materials

B. F. Goodrich Chemical Company A DIVISION OF THE B. F. GOODRICH COMPANY


More Profit...
IN "BREAD & BUTTER" DRUG ITEMS
Proprietory preparations begin with expensive elements, and progress, through costly conversions to consumer acceptance. Research, ingenious equipment, clever selling and sound packaging all play roles in winning brand-name preferences.
Near the end of this chain is carton selection where design and printing appeal bring the consumer to the point of purchase. A fine appearing carton—the finest—is a very small part of product cost—you can afford to buy the best.
The formula for wise carton buying is simple—a reliable folding boxmaker, one who uses Ridgelo Clay Coated boxboards regularly. We believe the pennies spent on Clay Coated folding cartons will justify the dollars that go into the production of your quality product.
Ridgelo
CLAY COATED
BOXBOARDS
Save Waste Paper—don't waste it!
MADE AT RIDGEFIELD, N. J., BY LOWE PAPER COMPANY
Representatives: Bradner Smith and Company and Mac Sim Bar Paper Company, Chicago • H. B. Royce, Detroit
Gordon Murphy and Norman A. Buist Los Angeles • A. E. Kellogg, St. Louis • Philip Rudolph & Sons, Inc., Philadelphia

Many have fought and will come back to us strong . . . many have been wounded in body or spirit . . . many have fallen in their last battle—the known and unknown dead. They knew what they were fighting for.

Many still must fight for victory on other shores. They, too, know what they are fighting for.

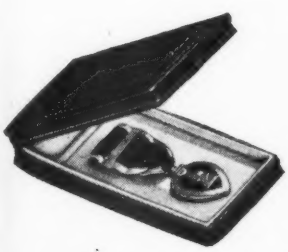
With shells, with bombs and with spades, they have carved in the earth the meaning of their fight.

They have painted with blood a dream for the future.

Without compromise, they have fulfilled their agreement with us. Without compromise, we shall fulfil our agreement with them: *To perpetuate the Four Freedoms—for them, for us, for our children, for the generations yet to come.*

Freedom of Speech, Freedom of Worship, Freedom from Want, Freedom from Fear. These—the terms of their contract. These—the rewards of their victory.

They knew what they were fighting for. We cannot forget.



Arrow is proud that during these war years it has been one of the country's largest suppliers of the boxes which hold the Purple Heart and the many other medals for the heroes in our Armed Forces.

Arrow BOXES AND DISPLAYS

ARROW MANUFACTURING COMPANY INC. • FIFTEENTH AND HUDSON STREETS • HOBOKEN, NEW JERSEY

Moment on Mt. Suribachi—

Seven men, slow moving, weighed down with field gear and wearied with battle, went up the rugged slope of Mt. Suribachi that Friday afternoon . . . not knowing that within a day three of their number would be dead and one wounded, and within a week all would be immortal in history.

While the six Marines struggled to set the flagstaff in the rubble of the bombed, fought-over summit, the seventh took pictures of the flag raising. Joe Rosenthal, AP man, for fifteen years a press photographer around Los Angeles, sent in his negatives to the picture pool. One of those films held the most appealing picture of World War II, and made modest Joe Rosenthal a national figure.

For its members, the Associated Press chose E-F to produce an edition of the Rosenthal photograph in full color lithography, in a print sixteen by twenty-two inches . . . With permission of AP, we produced some extra copies for our friends in advertising. Without charge, of course. But only one copy per request, please.

Additional prints in quantities, may be obtained by ordering direct from the Press Association, Inc., 50 Rockefeller Plaza, N. Y. C.

Einson-Freeman Co., Inc. *Lithographers*

STARR & BORDEN AVENUES, LONG ISLAND CITY 1, NEW YORK

Champion Kromekote

Beautifully adorned in the rich, shimmering beauty of Champion Kromekote, your product gains immediate attention in any company, stands apart from all its rivals, creates that all-important first impression. This glossy paper is especially popular for packaging jewelry, cosmetics, candies, perfumes, food, stationery, pens, beverages, and other fine products. Champion Kromekote will be available postwar in greater quantities. Plan now to utilize this exclusive, patented product for the ultimate in package beauty and sales appeal. Samples and information on request.

THE CHAMPION PAPER AND FIBRE COMPANY . . . HAMILTON, OHIO

MILLS AT HAMILTON, OHIO . . . CANTON, N. C. . . . HOUSTON, TEXAS

POSTWAR PRIMER OF PROTECTION

C is for Cheese

kept fresh, moist and tangy in **PLIOFILM** — because it seals moisture *in*!

and Crackers, too

kept crisp, crunchy and flavorful in **PLIOFILM** — because it seals moisture *out*!

You'll sell fine foods at a new peak of freshness and flavor just as soon as they can be packaged in **PLIOFILM** — for a double-barreled reason. ★ This transparent, air-vapor-proof wrapping has no equal for keeping moisture where it belongs — *inside* or *out*! ★ Best proof of that is the fact **PLIOFILM** has measured up to the job of moisture-protecting American warplane engines. ★ That is why none has been available for bringing harvest-ripe fruits and vegetables to American tables; for safeguarding tobaccos, drugs and all moisture-sensitive products. ★ But alert merchandisers everywhere are planning now to **PLIOFILM**-seal their wares, come peace — to assure the finest quality ever known. Chemical Products Division, Pliofilm Sales Department, Goodyear, Akron 16, Ohio.

Pliofilm

A PRODUCT OF GOODYEAR RESEARCH

GOODYEAR
THE GREATEST NAME IN RUBBER

ALL OUT FOR THE MIGHTY 7TH—BUY MORE WAR BONDS

Pliofilm—T. M. The Goodyear Tire & Rubber Company

JUGGLING ? OR COLOR CONTROL?

Typical of the precision control equipment in use at IPI is the recording spectrophotometer, a measuring device capable of detecting almost infinitesimal variations in color reflectance in ranges far beyond that of the human eye.

To maintain uniformity of color on your packages you have a choice between setting up each job on the press and juggling the inks for correct color matches or of establishing color control before you begin to print. The logical method, of course, is to make sure *before* you start.

This can be accomplished accurately and dependably through an IPI Color Standards Survey. After the desired colors and stocks have been selected, leading package printers consult IPI. Together we survey the printing conditions which must be met. The correct formulation of ink for each job will then be determined, taking into consideration the normal physical or chemical influences which might affect the final result. We then furnish the printers with color guides of the exact colors which have been specified—on the types of stock which will be used—showing (1) average, (2) lightest and (3) darkest allowable tolerance. The IPI branch serving the printer will have a record of the formulas. All that the printer will have to do at any time to obtain the desired shade is to order by formula number from IPI and the proper ink will be supplied.

Leading package, bag, carton, container and label printers have long recognized International Printing Ink's technical skill and experience in the development of materials and methods for uniformity of color control, inks without odor, faster drying inks, non-bleeding wax-set inks, and inks resistant to soap, moisture, mild alkalis, alcohol or food acids. This leadership is the direct result of our continuous program of color research and our use of precision control equipment—such as the General Electric Recording Spectrophotometer, Spectrograph, IC Viscometer, IC Tackmeter, Electron Microscope and other equipment, some of it our own development—for the exact measurement and analysis of color and materials. IPI laboratory technicians and your IPI representatives are equipped to help you. Keep in touch with IPI!

ipi

INTERNATIONAL PRINTING INK

DIVISION OF INTERCHEMICAL CORPORATION, EMPIRE STATE BUILDING, NEW YORK CITY

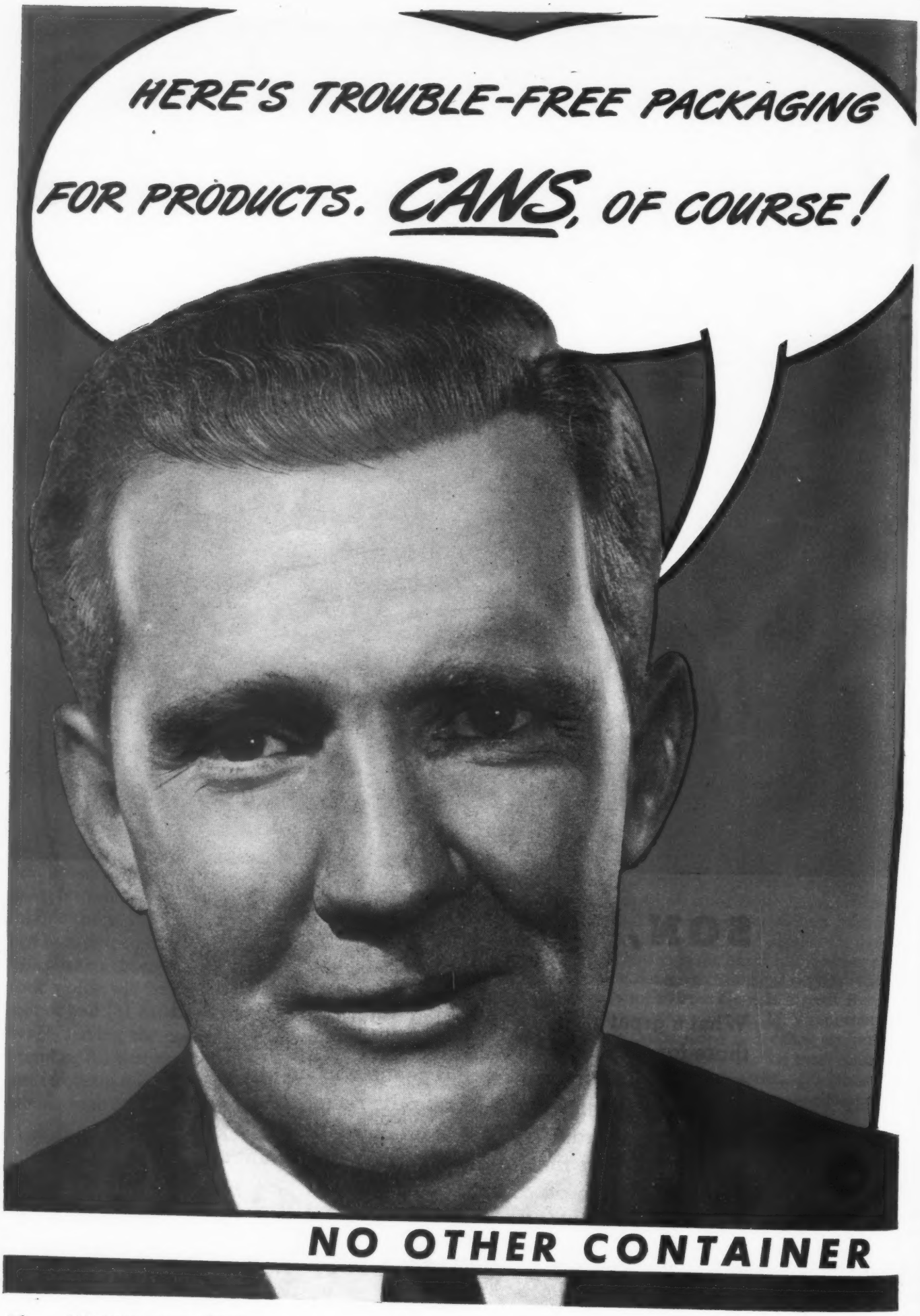
Reg. U. S. Pat. Off.

SON, YOU'VE GROWN

What a great satisfaction for our returning G.I's to find those for whom they fought well and strong. The generation which will inherit the peace will be physically prepared to enforce it and reap its benefits.

H-A Standardized Glass Containers have played a part in helping the program of food distribution and will continue to do so until final victory.

HAZEL-ATLAS GLASS COMPANY, Wheeling, W. Va.


HERE'S TROUBLE-FREE PACKAGING
FOR PRODUCTS. CANS, OF COURSE!
NO OTHER CONTAINER

Cans don't break . . . they seal out air and light . . . are economical to ship and store . . . easy to handle and display!

● "As a manufacturer of consumer goods, I'm vitally concerned with *trouble-free packaging* for my products. Retailers and consumers feel the same way. And experience has proved that *cans* are *really* trouble-free!

"You see . . . cans don't break, crack, split, or tear. They prevent light- and air-deterioration. They're economical to pack, ship, and store because they're light in weight, compact. And for the same reason, cans are easy to handle and display.

"Cans have sales appeal. Their large area makes more effective labeling possible (by lithographing right on the can, if desired). Thus, cans stand out on crowded shelves . . . catch consumers' attention . . . make brand recognition easy . . . help sell goods.

"Every point a packaging plus! So take my tip . . . pack your products in steel-and-tin *cans* when cans become widely available once more."

WATCH FOR NATIONAL ADS!

More than 31,000,000 printed messages—full-page ads in full color—are appearing this month in 6 big consumer magazines and in Sunday supplements on a nation-wide scale. This powerful ad campaign reminds readers how *cans* help *them* . . . points out that no other container combines so many advantages.

HERE ARE THE

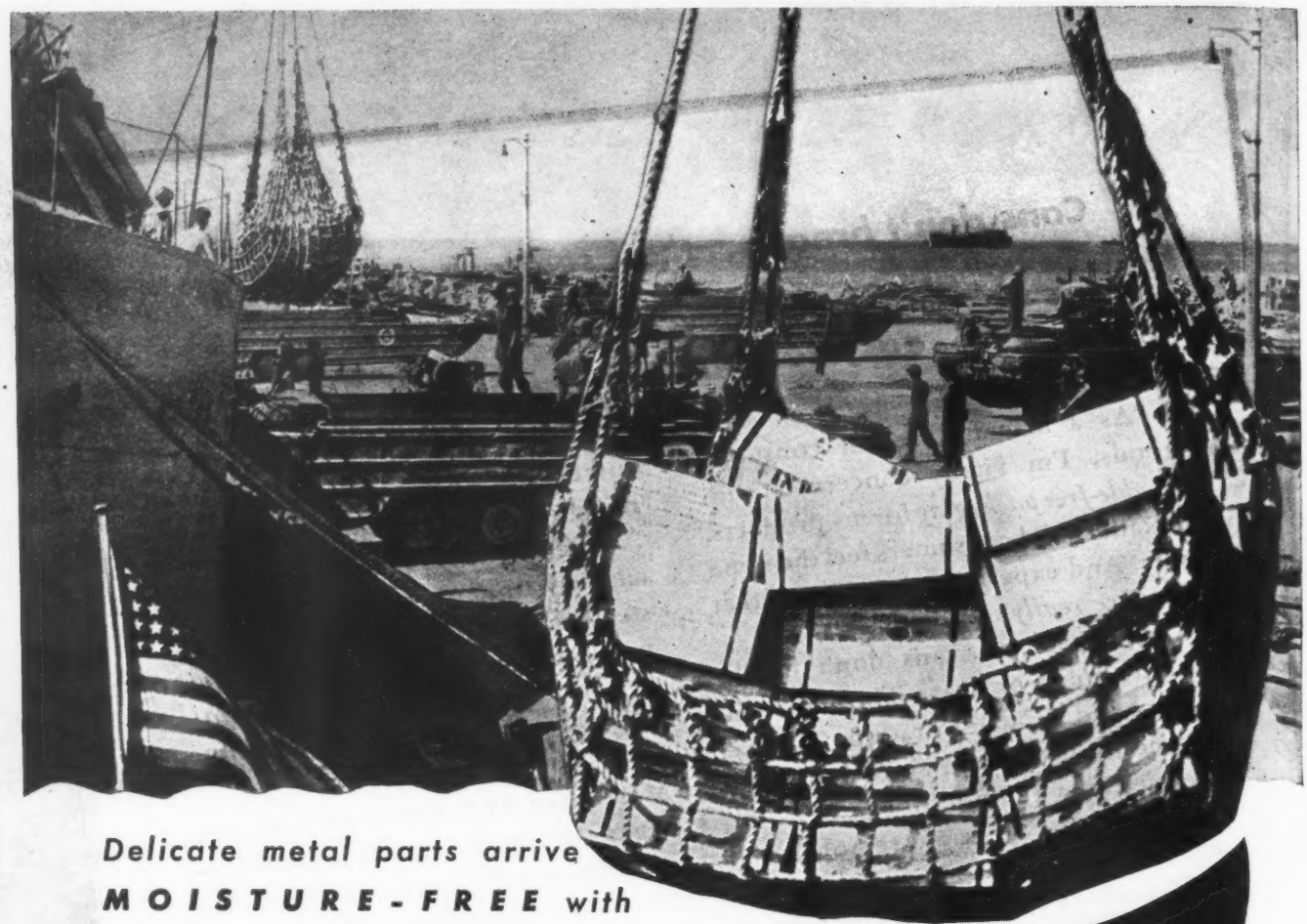
5 MAJOR REASONS

Why Consumers Prefer GOODS IN CANS!

1. Cans don't break, crack, split, tear.
2. Goods in cans keep better, longer.
3. Cans prevent air- and light-spoilage.
4. Cans are so convenient.
5. . . . And so economical.

CAN MANUFACTURERS' INSTITUTE, INC., NEW YORK

PROTECTS LIKE THE CAN



Delicate metal parts arrive
***MOISTURE-FREE** with*

Joliet SILICA GEL

The ideal drying agent....

THOUSANDS OF PACKAGES of delicate, precision metal parts are being delivered to our fighting fronts . . . moisture-free and rust free . . . because of Joliet Silica Gel.

The power of crystalline Joliet Silica Gel to absorb atmospheric moisture within containers is almost phenomenal. Its drying action prevents rust and corrosion. Moreover, it is widely used as a drying agent in cartons and boxes of foods, fabrics, chemicals and other commodities.

Joliet Silica Gel is strictly a quality product. It is clear white; passes a rigid section test; meets exacting government specifications. Write today for full information.

Opportunity for Jobbers

There are excellent opportunities for jobbers to build profitable business on Joliet Silica Gel in a few territories. Write for details.

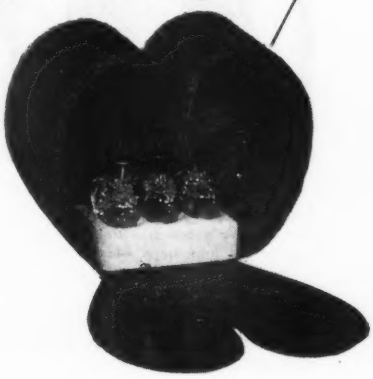
JOLIET CHEMICALS, LTD.
INDUSTRY AVENUE
JOLIET, ILLINOIS

Star-Gazing . . . Yes!

but, with us it's not just wishful thinking! The package of the future is more than a streamlined dream to us. The post-war revival of competitive selling will rank customer-appeal as the first requisite of every container. Knowing this, Warnercraftsmen are already making use of the newest developments in packaging materials and design in planning distinctive, eye-appealing containers . . . are keeping in touch with the uses and qualities of materials not now available.

Their experience and resourcefulness which in the past have seen success in solving all types of packaging problems, from sturdy cartons to delicate cosmetic boxes, are ready for ***new*** problems . . . ***new*** markets.

So . . . if your daydream is winning post-war market acceptance of your product . . . bring your packaging problems to us ***now***. Let Warner Brothers' experienced technicians help in making that dream to-morrow's reality.



WARNERCRAFT

"THE FINEST WORD IN PACKAGING"

Makers of set-up and folding boxes of all types, transparent acetate containers, hand made specialties, counter displays and dispensers.

THE WARNER BROTHERS COMPANY

Main Office and Factory: 325 Lafayette Street, Bridgeport, Conn.
New York Sales Office: 200 Madison Avenue, New York, N. Y.

"The bigger the family—the better the service"

LUCKY the man who has a big family of kids to wait on him! So is the customer who consults Continental, largest united family in packaging.

We can give you unusual service. The variety of containers we're making now is proof we'll give you the container you need.

Impartial research analyses by experts, and wide facilities assure you we can produce your ideal package. We make metal containers, liquid-tight paper cups and containers, fibre cans and drums, steel pails, and varied heavy duty containers.

Right now we're working hard for Uncle Sam. But keep your eye on Continental! And on Continental's trademark, too! The Triple-C stands for *one* company with *one* policy—to give you only the very best in quality and service.

Tune in: "REPORT TO THE NATION" *every Saturday over coast-to-coast CBS network*

CONTINENTAL PAPER CONTAINERS—Our complete line of attractive paper cups and protective liquid-tight containers has long been widely used by food and meat packers and by dairies everywhere. Especially popular for packing moist foods of all kinds. Space-saving nested cups are available in 4, 6, 8, 12 and 16 oz. capacities, plus Mono Containers in sizes from 1½ oz. up to 10 lb.; liquid-tight containers range from ¼ pint to 10 lb. capacity.

CONTINENTAL

PAPER DIVISION

CAN COMPANY, INC.

FIBRE DRUMS The Container Co., Van Wert, Ohio

LIQUID-TIGHT FOOD CONTAINERS Boothby Fibre Can Co. Roxbury, Mass.

PAPER CUPS AND FOOD CONTAINERS Mono Containers Newark, N. J.

COMBINATION PAPER AND METAL CONTAINERS

Headquarters: 330 W. 42d St., New York 18, N. Y.

13 Plants — Sales offices in all principal cities

Meet Your Packaging Needs with this . . .

Wax-Laminated Paperboard!

Photo courtesy Robert Gair Paper Co.

Strong Bond as well as Moistureproof Barrier Provided by Socony-Vacuum Microcrystalline Waxes

● For economical protection against moisture-vapor, many packagers are discovering the advantages of wax-laminated paperboard.

One reason behind the success of this comparatively new development is Socony-Vacuum microcrystalline waxes. Inherently adhesive, these tough, ductile waxes not only form a barrier to the transmission of moisture-vapor between the plies of paper, but also a strong bond to hold the plies together. By using a greaseproof paper as one of the plies, it's possible to protect against both grease and moisture-vapor in one economical package.

Microcrystalline waxes stay flexible at low temperatures, an important factor in packaging frozen foods. They're economical to apply in virtually all forms of laminations. See your Socony-Vacuum Representative for facts and figures, and for assistance on applications to your packaging needs.

Call in Socony-Vacuum Process Products Research and Service —

Process Products
SOCONY VACUUM

SOCONY-VACUUM OIL CO., INC.

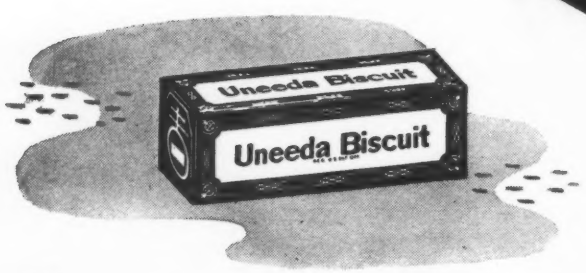
26 BROADWAY, NEW YORK 4, NEW YORK

Standard Oil of N. Y. Div. · White Star Div. · Lubrite Div.
Chicago Div. · White Eagle Div. · Wadhams Div. · Magnolia Petroleum Company
General Petroleum Corporation of California

TUNE IN "INFORMATION PLEASE"—MONDAY EVENINGS, 9:30 E.W.T.—NBC

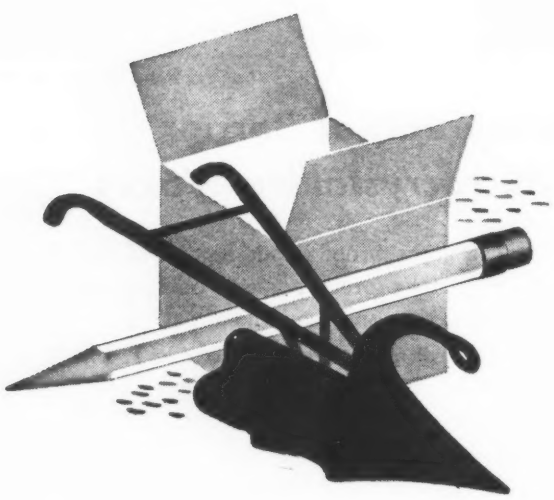
The Package of The Future

GAIR



In 1896 This famous package took the cracker out of the barrel. Made by Gair, it was the paper box that actually revolutionized food merchandising.

In 1942 This noted package took the balanced ration of the mess hall into the fox hole. It provided a hazardproof meal under any emergency. Tens of millions of these life saver containers were manufactured by Gair.



In 195? Tomorrow's packaging problems are being solved today by Gair ingenuity. The principles of packaging that are meeting rigid wartime standards, will be utilized in packaging everything from pencils to plowshares.

For 80 years, Gair has been a major contributor to the scientific art of packaging. Many of the great industries of America and the world have turned to Gair to solve their packaging problems. Many an obscure product has achieved international distribution due to the ingenious packaging ideas of Gair. The paper box for Uneeda Biscuits back in 1896, is but one example. And out of the necessity of this great war, Gair engineers have developed amazing contributions in packaging everything from blood plasma to airplane parts.

• *Make your postwar packaging plans now and gear those plans to Gair.*

SAVE WASTE PAPER

ROBERT GAIR COMPANY, INC., NEW YORK • GAIR COMPANY CANADA LIMITED, TORONTO

Folding Cartons • Box Boards • Fibre and Corrugated Shipping Containers

Merchandising Tips—No. 1

How to Get the Women's Vote—for your Package

MRS. HOUSEWIFE—the buyer who does 90% of all retail shopping—the lady with billions to spend every year—she's the one who gives the final okay to your product *and* the package in which it is presented.

Unbiased *prewar* surveys showed that women favor the honest, convenient glass package. And since then, Anchorglass packages have made literally millions of new friends!

Women like the way Anchorglass containers speed up shopping. They *see* immediately what they're getting—like the way new uses suggest themselves when they *see* the product. They appreciate the convenience of an Anchor Cap that flips off or unscrews in a single, easy motion. And they like the way the complete Anchorglass package keeps its contents fresh, wholesome, completely free of foreign taints until the last bit is used!

There's a right combination of light, strong, easy-handling Anchorglass container and dependable, convenient Anchor Cap to fit your product perfectly. Our packaging engineers will be glad to help you work out fast, economical ways of handling glass on your production line. Why not let us show you how to give women what they want with a modern, self-selling Anchorglass package when postwar competition floods the field.

Hear how Anchor Hocking is educating millions of your customers and retailers every week to the advantages of modern glass packaging—"Meet Corliss Archer" every Thursday evening, entire Coast-to-Coast Network, CBS.

Anchor
CONTAINERS and CAPS

PRODUCTS OF
ANCHOR HOCKING GLASS
CORPORATION
LANCASTER, OHIO

Hot-Melt Adhesives with the *characteristics* you need

Heat Sealing: Darex Laminating Adhesives do not flow or delaminate under heat sealing conditions.

Bond Strength: Darex Laminating Adhesives give high bond strengths over a wide temperature range.

Stability: Darex Laminating Adhesives are stable at normal operating temperatures. They are easy to use and can be kept continuously molten since they do not stratify or throw out constituents.

Moisture-Vapor Transmission: Darex Laminating Adhesives have been compounded to give you the degree of protection against moisture-vapor transmission that you need.

Creasing: Because of their formulation, Darex Laminating Adhesives give chamois-like characteristics to laminated sheets. This greater flexibility lends itself to folding carton manufacture and bag forming where scoring and creasing cannot be avoided.

★

Darex Laminating Adhesives are designed to bond non-protective or semi-protective sheets to themselves or other bases to form protective packaging materials. We do not claim that Darex Laminating Adhesives will solve all laminating problems, but our experience with them indicates that they offer to the industry a series of new materials whose properties package users have long sought. Our technical staff welcomes the opportunity to discuss these products with you.

Darex Laminating Adhesives

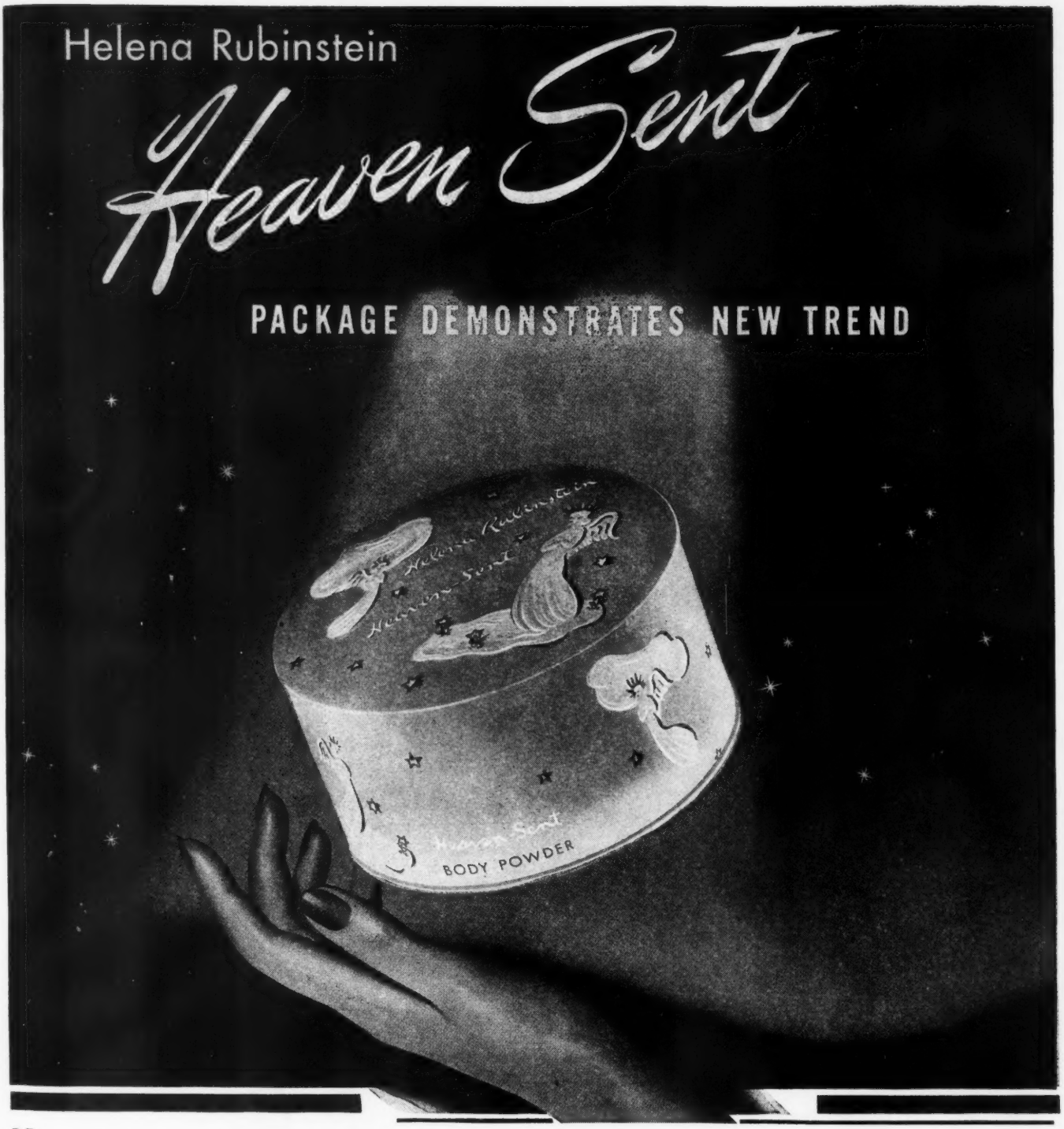
Manufacturers of Darex Thermoplastic Coating Materials and Adhesives for protective packaging.

DEWEY AND ALMY CHEMICAL CO.
CAMBRIDGE 40, MASSACHUSETTS

Helena Rubinstein

Heaven Sent

PACKAGE DEMONSTRATES NEW TREND



MORE AND MORE manufacturers of top-flight consumer products are recognizing the Ritchie dictum that *character and beauty in the package proclaim the quality of the product.*

With the discriminating women who purchase Helena Rubinstein Heaven-Sent Powder, beauty is a powerful selling factor. This attractive package compels their attention, suggests superior quality and WINS SALES.

Ritchie leads in making *packages that* SELL!

WAY TO A BETTER PACKAGE. The Ritchie way integrates art and artisanship—to give you a better package at a low unit cost. A package that unmistakably identifies, fully protects and conveniently dispenses your product. Practical, production-planned—easy to fill, stack and display—but *above all* designed for BEAUTY THAT SELLS!

THE 5 ESSENTIALS OF A SELLING PACKAGE

1 It must be practical, production-planned, economical to manufacture, easy to fill or pack.

2 It must fully protect and conveniently dispense the product.

3 It must be easy to handle, to stack and display.

4 It must *proclaim* the quality and identity of your product.

5 It must be "good-looking," memorable, ATTRACTIVE!

W. C. Ritchie and COMPANY

8845 Baltimore Avenue • Chicago 17

Set-Up Paper Boxes • Fibre Cans • Transparent Packages

NEW YORK • DETROIT • LOS ANGELES • ST. LOUIS • MINNEAPOLIS

"...and, Gentlemen, speaking of

ng of postwar packaging...

COATED LITHWITE IS GOING TO PUT MORE EYE-APPEAL AND BUY-APPEAL INTO OUR CARTONS"

SIX YEARS AGO, when Gardner-Richardson introduced *Coated* Lithwite, it caused a sensation. Here for the first time was a fine paperboard—formed, made and coated in one single high-speed operation.

SALESMEN, RETAILERS, CONSUMERS give it a big okay, for *Coated* Lithwite is brighter, more eye-appealing. Colors come up with greater brilliance on its smooth, velvety, chalk-free surface. Product pictures print with sharp realism.

PRODUCTION ENGINEERS also give *Coated* Lithwite folding cartons a big okay. Precision-made for precision filling machines—*Coated* Lithwite cartons speed through with fewer jam-ups or delays. Score accurately without flaking or shattering. Take a positive seal.

CLIP THIS!

File this Coated Lithwite memo for reference when this quality paperboard is again available.

1. Made by a revolutionary process. Coated Lithwite is the brighter, whiter paperboard that is formed, made and coated in one high-speed operation. Proved and improved for six years.

2. Means more eye-appealing cartons. Coated Lithwite's smooth, velvety, chalk-free surface forms a better base for printing inks and plates—reproduces even the smallest type cleanly, crisply. Brings colors up brilliantly —gives halftones a sharp realism.

3. Fewer jammers and leakers. Coated Lithwite scores accurately without flaking or shattering. Takes a positive, tight seal.

The Gardner-Richardson Co.

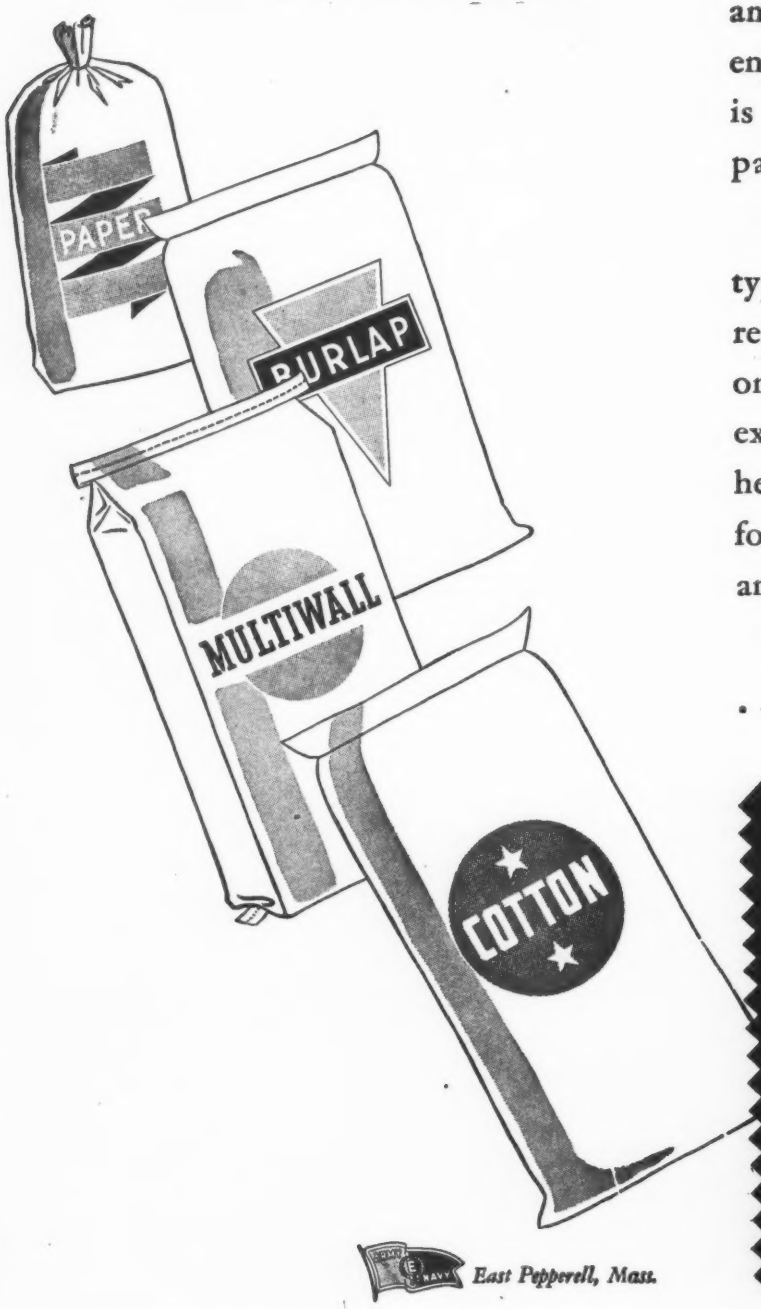
Manufacturers of Folding Cartons and Boxboard

MIDDLETOWN, OHIO

Sales Representatives in Principal Cities: PHILADELPHIA • CLEVELAND • CHICAGO • ST. LOUIS • NEW YORK • BOSTON • PITTSBURGH • DETROIT

Whatever's the BEST BAG FOR YOUR USE

. . . we make it!



WHEN you buy your bags from Bemis, among the important advantages you enjoy is this: You can buy whatever type is best for your particular use—cotton, paper, multiwall, burlap or waterproof.

Bemis is a leading producer of *all* types of bags and consequently has no reason to high-pressure you toward any one type. We have no favorites. If our experienced packaging specialists can help you to determine which is the best for your use, you may be sure that their analysis and advice will be unbiased.

Whatever's the *best bag for your use* . . . we make it.

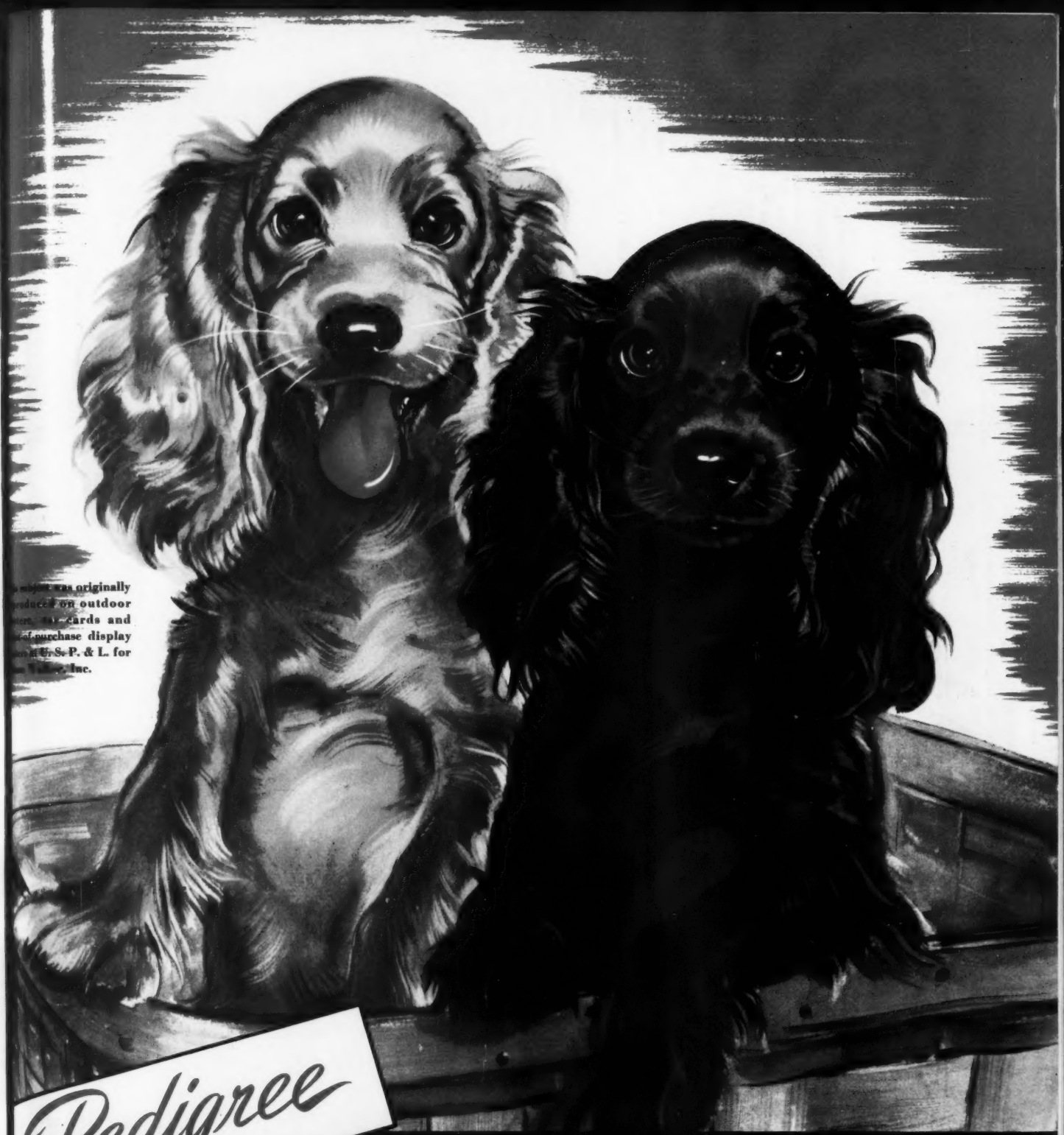
BEMIS BAGS

BEMIS BRO. BAG CO.

OFFICES • Baltimore • Boston • Brooklyn • Buffalo • Charlotte • Chicago • Denver • Detroit • East Pepperell • Houston • Indianapolis • Kansas City • Los Angeles • Louisville • Memphis • Minneapolis • Mobile • New Orleans • New York City • Norfolk • Oklahoma City • Omaha • Peoria • St. Helens, Ore. • Salina • Salt Lake City • San Francisco • Seattle • Wichita • Wilmington, Calif.

BETTER BAGS SINCE 1858

East Pepperell, Mass.



...was originally ...duced on outdoor ...ers, ad-cards and ...of-purchase display ... U-S-P. & L. for ... Inc.

Pedigree

WILL SHOW UP IN LITHOGRAPHY TOO...

Every really successful point-of-purchase advertising display . . . outdoor poster . . . booklet or broadside . . . has its distinguishable mark of quality reproduction. The lithographed advertising materials produced at "U-S" reflect the kind of quality that is the heritage of more than seventy-five years of experience in fine color reproduction . . . plus the know-how of highly skilled craftsmen working with finest modern equipment. To realize the fullest possibilities of your next display . . . call on "U-S" to produce it. "U-S" service is nation-wide . . . as near to you as your telephone.

U S and P L

THE UNITED STATES PRINTING & LITHOGRAPH COMPANY

HOME OFFICE: 391 BEECH STREET, CINCINNATI 12, OHIO • SALES OFFICES IN PRINCIPAL CITIES

5 GREAT "U-S" PLANTS PRODUCING HIGHEST QUALITY ADVERTISING AND PACKAGING MATERIALS

About 2500 years ago, PLATO, the great Greek philosopher defined the Universe as a

WORLD OF IDEAS

In our time, Sir Arthur Eddington, famous British Astronomer said Matter might be

THOUGHT

We, too, have discovered that in our business the compelling, motivating force is

IDEAS

INTRIGUING SET-UP BOXES
CREATIVE FOLDING CARTONS
UNUSUAL MERCHANDISE COUNTER DISPLAYS
SPECIALIZED PACKAGING
ROUND BOXES

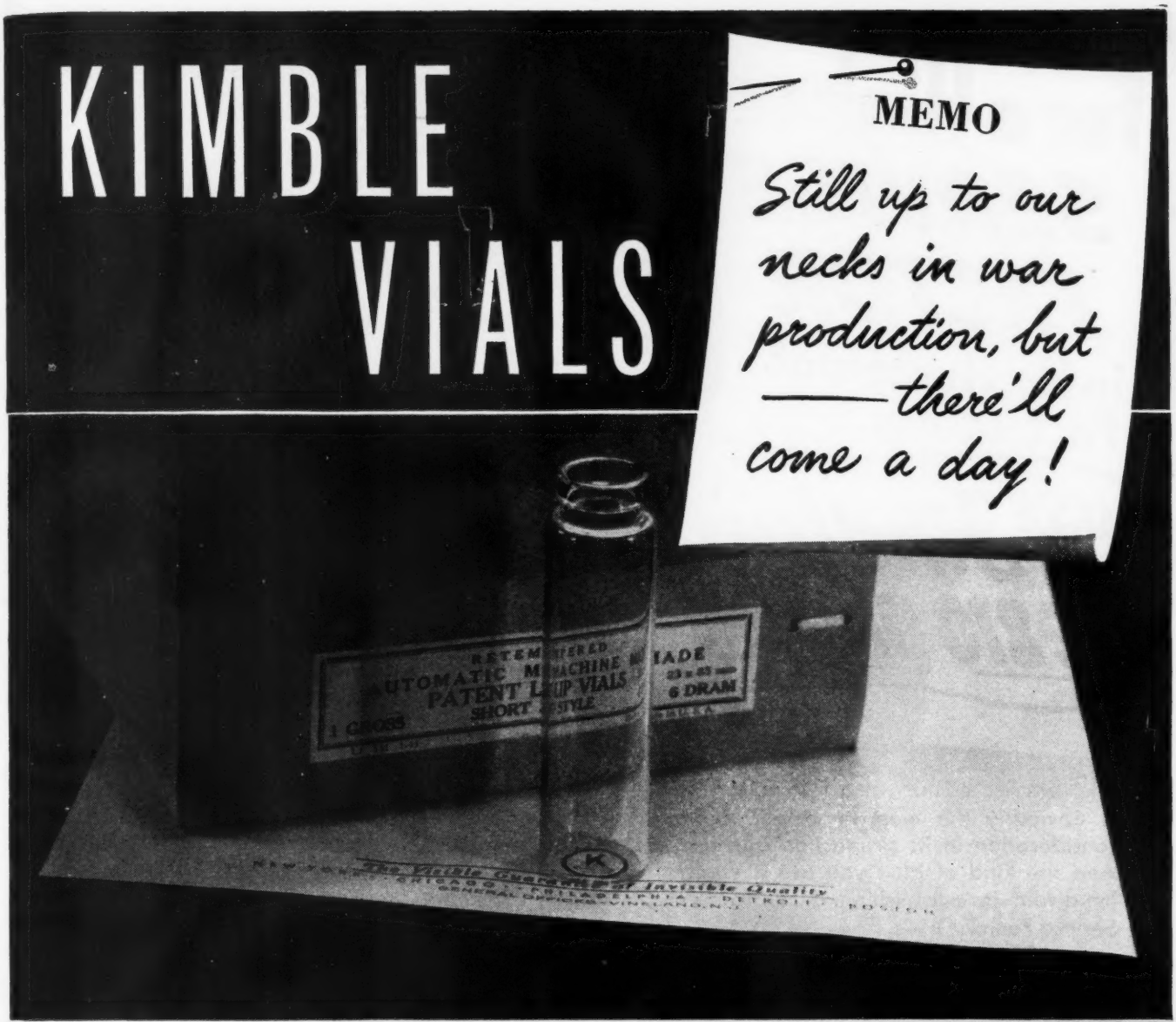
"The Better the Product the More Important the Package"

ACME PAPER BOX COMPANY

STATE AT SIXTIETH STREET • CHICAGO 21, ILLINOIS

CREATORS • DESIGNERS
MANUFACTURERS

KIMBLE VIALS


MEMO
Still up to our necks in war production, but —— there'll come a day!
1 GROSS
6 DRAM
The Visible Guarantee of Invisible Quality

for Greatest Transparency . . Least Distortion

This unretouched photograph of a Kimble vial, fabricated from machine-drawn Kimble glass tubing, tells its own story of how clearly this attractive type of container would display your product.

For Assurance

K
KIMBLE GLASS

• • • *The Visible Guarantee of Invisible Quality* • • •

KIMBLE GLASS COMPANY . . . . VINELAND, N. J.

NEW YORK • CHICAGO • PHILADELPHIA • DETROIT • BOSTON • INDIANAPOLIS • SAN FRANCISCO

For a Higher SERVICE FACTOR in Moistureproof Packaging...

USE Findley's #C-810 Glu-Weld

TIME TO SWITCH TO Findley's

The "Service Factor" of a folding carton is obviously the most important single consideration in its *production* and *use*. And the kind of glue you use is vitally important in establishing a *satisfactory* Service Factor.

If you are making folding cartons for packaging products of high moisture content such as flowers, frozen foods or meat, for example, you definitely require Findley's No. C-810 "GLU-WELD". Its exceptional adhesion characteristics, clean machining and excellent coverage provide a high Service Factor on *your* production line . . . and its high resistance to moisture, plus its permanent "GLU-WELD", assures a satisfactory end-use Service Factor. Use-tested and proved on Ration Cartons.

It's time to switch to Findley's No. C-810 GLU-WELD!

THE F. G. FINDLEY COMPANY
1230 NO. 10th STREET • MILWAUKEE 5, WISCONSIN

Folding Box Production using Findley's Adhesives.

Staude Folding Box Machine operating at high speed, using Findley's Adhesives.

Findley's
INDUSTRIAL ADHESIVES
Exclusively

A wide range of products are packed to AD-vantage in Clearsite* plastic containers

USING CLOSURES TO SUIT THE PRODUCT

Clearsite
is
Shatterproof
Seamless
Featherlite

* Reg. U. S. Pat. Off.

Powders, crystals, tablets, and oils, with standard caps or dispensing closures; thread with thimble tops, surgical goods, machine parts, sporting goods, hardware, first aids, items which should be protected from either breakage or handling get better protection in CLEARSITE!

Our Package Design Engineers will gladly submit suggestions

CELLUPLASTIC CORP.

CELLUPLASTIC CORPORATION

40 AVENUE L NEWARK, N. J.

WEST COAST REPRESENTATIVES: CONTAINER SERVICE CO., 1266 North Western Avenue, Los Angeles 27, Cal.

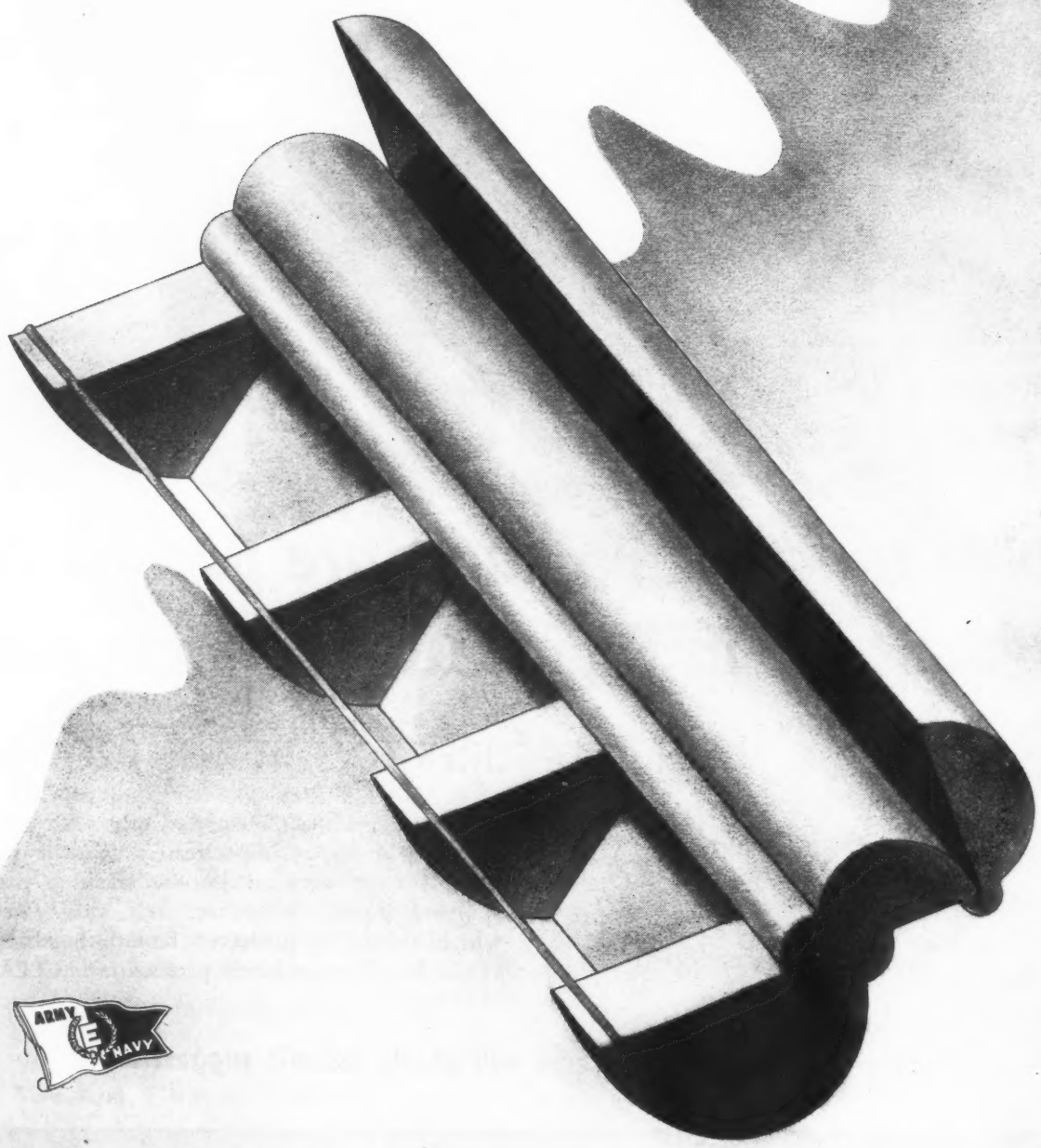
Post-War Trends in

Metal PRESENTATION BOXES

for the Jewelry and Pen and Pencil

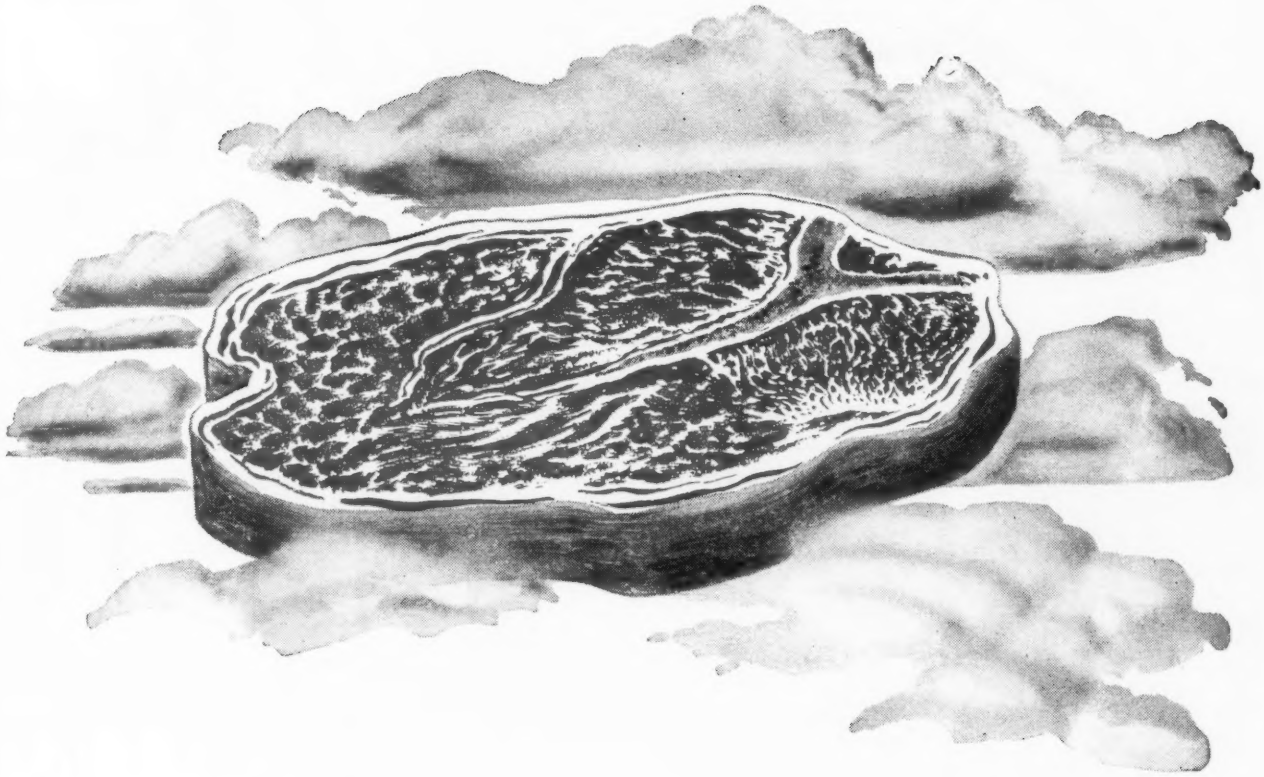
trade will be as unusual as this abstract

ESTABLISHED 1876



ARMY E NAVY

F. H. NOBLE & COMPANY 559 West 59th Street Chicago 21, Illinois



THE STEAK THAT *floated away* IN A CLOUD—

THAT'S EXACTLY WHAT HAPPENS to the 5 to 10% moisture weight of processed meats wrapped in ordinary packaging papers. It disappears into thin air.

Now if you only had the means of devising a package that eliminates excessive dehydration you could save—

Perhaps Keller-Dorian Functional Packaging Papers can take care of *your* packaging problem. They have qualities that can be advantageously used in controlling M.V.T. up to 1.3 grams—and/or light and moisture impenetrable barriers that preclude premature hydrolysis.

These new functional packaging papers are produced by Keller-Dorian in two structures: one, a plastic coating type; the other, with aluminum foil. Both are permanent, flexible and may be heat-sealed. Neither will crack, peel or become tacky at temperatures between 190° above and 50° below zero (F). Each may be scored, cut, folded to any size, shape or style of package.

Protecting precision parts and grease-packed machines on their way to battle fronts today, K-D papers will soon be protecting civilian products from spoilage and moisture-weight loss. And right *now* is the time for you to discover the packaging benefits these remarkable new papers will possibly provide for *your* product.

Investigation and experimental work on your part today may put you well ahead of the field tomorrow. Write for free testing samples and data now.

KELLER-DORIAN
CORPORATION
Empire State Building
New York 1, N. Y.

FUNCTIONAL PACKAGING PAPERS *for Protecting Perishable Products*

For the next several months the Union Paste Company will use the theme of **UPACO ON PARADE** to acquaint you with its complete line of adhesives designed to cover all operations in all types of packaging. Each advertisement will describe a particular **UPACO** adhesive for a specific operation. We urge you to watch for the first of this series.

GLU-WELD WATER-RESISTANT ADHESIVES • FLEXIBLE GLUES • STRIPPING GLUES • TRANSPARENT FILM ADHESIVES • FOLDING BOX ADHESIVES

UPACO

UNION PASTE COMPANY

QUALITY ADHESIVES SINCE 1866

1605 HYDE PARK AVENUE - HYDE PARK, MASS.

UPACO

CASE, BAG AND CARTON SEALING GLUES • LABELLING ADHESIVES • LAMINATING ADHESIVES FOR FILMS, PAPERS AND CLOTHS

Try this yardstick on your post-war package

You will want to make certain that your package measures up to the important job that effective post-war merchandising will set for it.

Will it give full visibility? People like to see for themselves . . . and help themselves. *Full visibility* lets them buy with *full confidence*. Transparent Du Pont Cellophane has proved a valuable sales help because it lets a product tell its own complete convincing sales story.

Will it provide sufficient protection? This fundamental function of packaging extends beyond protection from contamination and damage. It calls for protection of freshness, flavor and all-round quality. Moisture-proof Du Pont Cellophane is giving this protection today to thousands of varied products in all climatic conditions.

Will it permit packaging economy? Many merchandising experts are stressing the need for lower post-war distribution costs. This calls for a low-cost packaging material . . . that can be used most efficiently on automatic wrapping machines. Du Pont Cellophane offers the opportunity for true packaging economy.

Right now military demands limit the civilian supply of Du Pont Cellophane. We hope there will soon be enough to meet everyone's needs. Investigate Du Pont Cellophane today . . . so you can profit by its advantages tomorrow. E. I. du Pont de Nemours & Co. (Inc.), Cellophane Division, Wilmington 98, Delaware.

Du Pont Cellophane

Shows what it Protects—at Low Cost

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

THE BIGGEST THING IN THE WORLD CAN BE A PIECE OF PAPER

Great Buy *for a great day coming*

The Mighty 7th War Loan Drive is now on.

Each of these bonds is a certificate of a stronger partnership in a stronger, victorious America.

Every *extra* bond you buy is also an extra victory punch being delivered at just the right moment.

Since you will get only two chances to buy new bonds this year, instead of three, you'll really want to dig down for this Mighty 7th. Seven billion dollars worth have been set aside for individuals to buy.

Of course you'll help make it a success.

For this money means the best guns, tanks, ships and aircraft for our gallant fighters. It means amazing new bombers and jet-propelled planes. It helps to ship men and materiel halfway around the earth to finish the Jap.

These bonds mean benefits at home, too. Someday they will help send a son or daughter through college—or go toward a new postwar home or automobile.

Yes, it's the Mighty 7th. Let's all do our part.

OXFORD PAPER COMPANY

230 Park Avenue, New York 17, N.Y.

MILLS at Rumford, Maine and West Carrollton, Ohio

WESTERN SALES OFFICE 35 East Wacker Drive, Chicago 1, Ill.

Included in Oxford's line of quality printing and label papers are: Enamel-coated— *Polar Superfine, Mainefold, White Seal, Rumford Enamel and Rumford Litho C1S;* Uncoated —*Engravatone, Carfax, Aquaset Offset, Duplex Label and Oxford Super, E.F. and Antique.*

A BETTER PACKAGE FOR INSTANT COFFEE

Designed by
DOBECKMUN
using
ALCOA
Aluminum Foil

Distinguished service is being performed by this type of package on every war front today. This flexible package is unsurpassed in its ability to keep powders really dry in ration kits.

In test after test, the combination of Alcoa Aluminum Foil with heat-sealing films or coatings has proved to give maximum protection against moisture-vapor transmission. That protection is vital for hygroscopic products such as soluble coffee, dehydrated fruit juices, bouillon powder, drugs, and other concentrates.

The Alcoa Foil in this Dobeckmun Metalam package is sandwiched between a heat-seal coating and a colorfully printed cellulose acetate film. It is *truly* moisture-vapor-proof, lightproof, odorproof, and siftproof. Filled and formed cheaply on high-speed automatic machines.

When Alcoa Aluminum Foil is available again you will see scores of new and better packages using that metal's many great advantages. Consult your package designer or supplier on applying Alcoa Foil to your own packaging problems. Or write ALUMINUM COMPANY OF AMERICA, 2129 Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA ALUMINUM

ALCOA ALUMINUM FOIL

LOOKING INTO THE FUTURE

When you think of bottles
think of
Swindell

Machine made and hand made
glass containers for cosmetics,
drugs and beverages.

SWINDELL BROTHERS, Inc. BALTIMORE, MARYLAND

200 FIFTH AVENUE, NEW YORK ROBERTO ORTIZ—HAVANA, CUBA

MOISTURE VAPOR BARRIER

BAGS
POUCHES
BLANKETS

•

Specified by **U.S. ARMED FORCES** *for* **METHOD II PACKAGING**

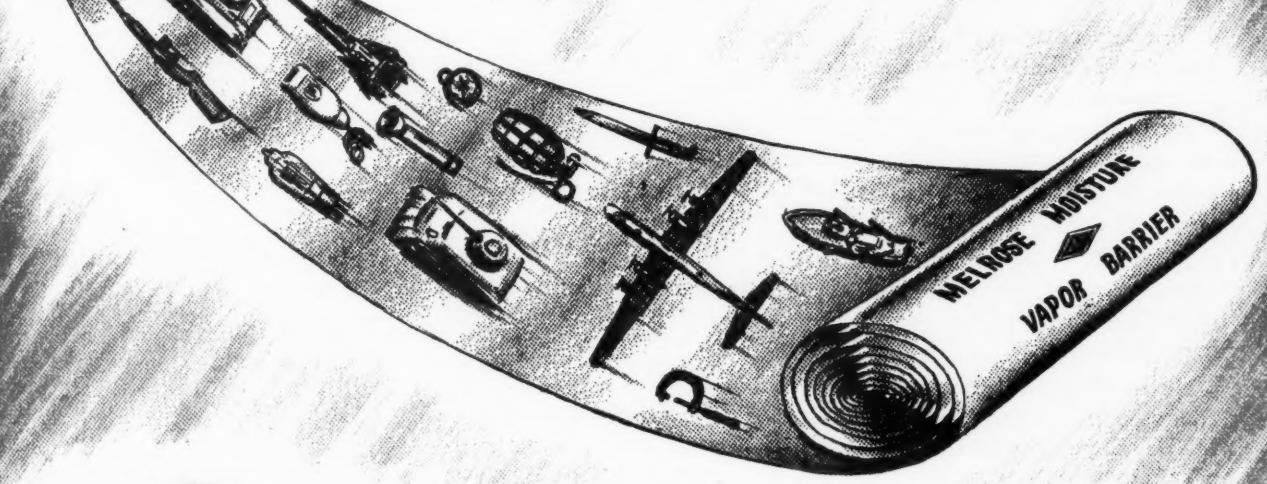
•

Protect your product against rust and corrosion . . . use

MELROSE MOISTURE VAPOR BARRIER!

•

We have the equipment and the experience to fabricate packages to meet your exact requirements. And what's very important is that our recently expanded facilities at our new location enable us to give you extremely prompt deliveries. Write us — no obligation.



MELROSE PACKAGING

525 UNION AVE. • BROOKLYN 11, N. Y.

MELROSE

EVER TRY TO WRAP A BOMBER ?

• Now here's a man-sized packaging job. This bomber is going overseas on the open deck of a cargo ship... has to be protected from salt spray, water, wind and lots of rough handling. How to do it? Well, it's practically wrapped in MYSTIK Self-Stik CLOTH TAPE.

You may not be wrapping bombers but we think it's a cinch you can use MYSTIK to help solve many of your packaging—packing—shipping problems.

MYSTIK has a powerful "self-stik" adhesive that holds like a bull dog to practically any surface... yet won't harm or mar the finest finish. It goes on with one motion—no moistening required—and strips off clean.

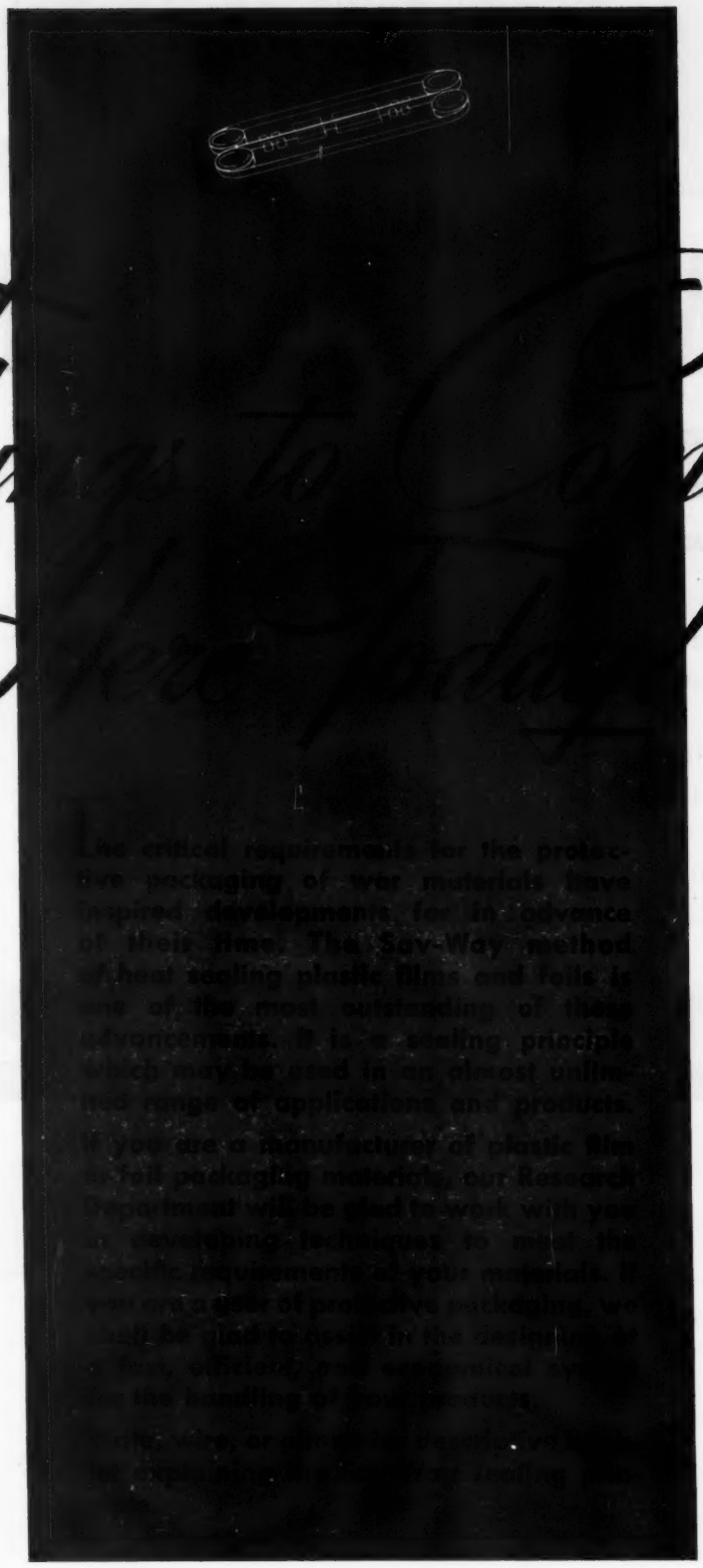
MYSTIK seals out water, salt spray, vapors, gases, odors, dust, vermin—and it's fungicide-treated. Since the start of the war, millions of yards each year have been protecting every kind of war material in every climate.

Now—while you're laying new post-war plans for new products and packages—is the time to try this amazing, new war-proved product. MYSTIK will help you plan packaging for better design, better product protection, handier construction. Write now for free offer below.

***FREE**—Big sample roll of MYSTIK Self-Stik CLOTH TAPE and idea-filled literature. Write: Mystik Adhesive Products, 2637 N. Kildare, Chicago 39.*

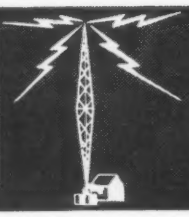
MYSTIK
Self-Stik
ADHESIVE PRODUCTS

Self-Stik Cloth and Paper Tapes, Protective and Masking Materials, Waterproof Packaging Papers, Advertising Signs and Displays, Self-Stik Stencils



If you will enclose samples of your materials, we shall be glad to test them for sealing properties.

SAV-WAY INDUSTRIES BOX 117, HARPER STATION, DETROIT (13) MICHIGAN



S·O·S TO CEL-O-SEAL CUSTOMERS

We Urgently Need Empty Containers

By sending them to us now, you will help us to fill your future orders promptly.

We are faced with a serious shortage of metal containers for CEL-O-SEAL cellulose bands. Because of the war, sufficient *new* containers are not available. We must depend on *you* to send us empties.

We will pay you OPA ceiling prices . . . also shipping charges. Please take steps today to have all empties in your plant returned to us. *We need them to ship CEL-O-SEAL bands to you!*

To help you to help us, we have prepared the following memo. All you have to do is fill it in and forward to the person in your plant responsible for returning containers. Please do not delay!

FOR QUICK ACTION. ROUTE THIS HANDY MEMO NOW

MEMO

Subject: Shortage of containers for CEL–O–SEAL BANDS

To_____

From the desk of_____

Please collect all empty cellulose-band metal containers together with lids and return them, shipping charges collect, to:

E. I. du Pont de Nemours & Co. (Inc.)
c/o Jewett Refrigerator Co., Inc.
2 Letchworth Street, Buffalo, New York

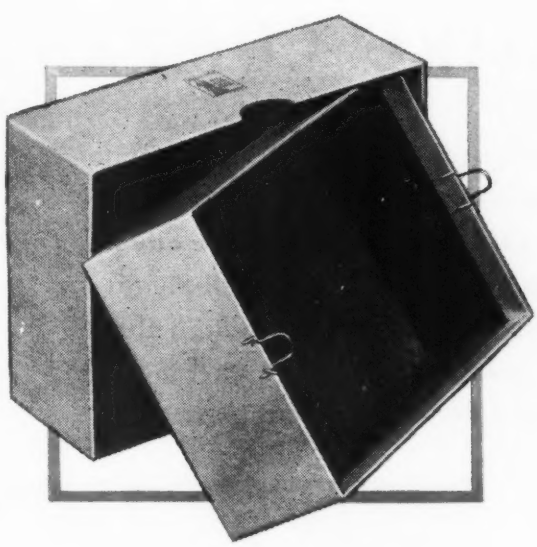
Be sure to crimp down two lugs on lids to hold them on, and bundle together as many containers as possible.

Prompt action is necessary, as these containers are irreplaceable, and are needed so that our future CEL–O–SEAL orders can be promptly filled.

OPA ceiling prices will be paid for empties.

DU PONT CEL-O-SEAL BANDS DU PONT BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

ASSEMBLY LINE BABY!



BORN of the war emergency, the use of Mason MailMasters has made possible a new record in production line packaging of small parts. Safe, convenient and economical, they permit faster assembly line work, better inventory control.

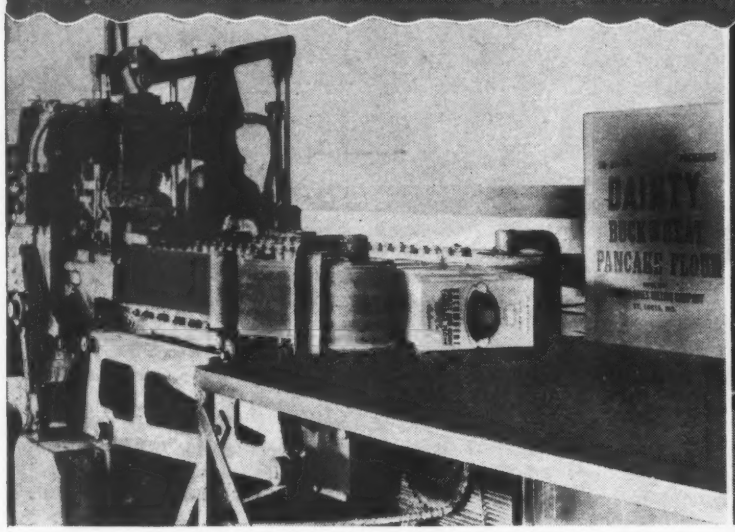
Rugged, compact Mason MailMasters are the perfect containers for overseas and domestic shipment of small parts or products that require positive protection in transit. When there no longer is a need to package war-critical supplies, Mason MailMasters will be available to protect your postwar product!

The MASON BOX COMPANY

ATTLEBORO FALLS, MASS.—175 5TH. AVE., NEW YORK

Protection

for the Product, from insects . . . .



with the S & S TIGHT WRAPPED PACKAGE at VALIER & SPIES MILLING COMPANY

ST. LOUIS, MISSOURI

For that *added protection* against insect infestation . . . for a *stronger, tighter and more attractive package*, the S & S Tight Wrapped Package provides the ideal answer.

Many of the leading Packers and Food Manufacturers have adopted the S & S Tight Wrapped Package for such products as Flour, Cereals, Salt, Dried Fruits, and many others.

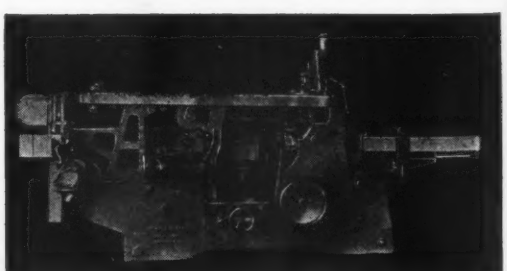
Why don't you consider these advantages for *your product*? We'll gladly give you complete detailed information about S & S Tight Wrapping or other S & S Filling and Packaging Machines.

STOKES & SMITH CO.

FRANKFORD, PHILADELPHIA 24, PENNA.

FILLING-PACKAGING-WRAPPING MACHINES

Speeds to suit your needs — 15-30-60-120 per minute



BETTER MACHINES FOR BETTER PACKAGES

Christmas 1945

ADD TO THE CHEER OF THE SEASON BY USING WARM, COLORFUL DECORATED PAPERS — WE HAVE MANY NEW DESIGNS FOR

BOX COVERING—DISPLAY PAPERS AND GIFT WRAPPINGS

WHILE THE AVAILABILITY IS NOW LIMITED WE MAY BE ABLE TO TAKE CARE OF SOME OF YOUR NEEDS.

This sample Pattern 565-2 Red Suede Base.
Also made in other Color Combinations.

ROYAL PAPER CORPORATION

Manufacturers of Decorative Papers

210-216 ELEVENTH AVENUE • NEW YORK 1, N. Y.

Introducing Mardi-Gras

A STIMULATING NEW BOX PAPER ESPECIALLY DESIGNED FOR THE COSMETICS, CONFECTIONERY, PAPETERIES AND GIFT FIELDS

This exclusive new design is typical of the unusual decorated papers which *Williams* offers the packaging field. MARDI-GRAS was created with the cosmetic, confectionery, gift and papeteries fields in mind.

Stocked in four attractive items as shown. Your own color combinations made to order.

We will be glad to send you sheets for your sampling purposes.

CHARLES W. WILLIAMS & CO., Inc.

AUTHORITIES ON BOX COVERING PAPERS

303 LAFAYETTE STREET
NEW YORK 12, N. Y.

444 WEST GRAND AVE.
CHICAGO 10, ILL.

167 OLIVER STREET
BOSTON 10, MASS.

PREVENTING SEALING PROBLEMS

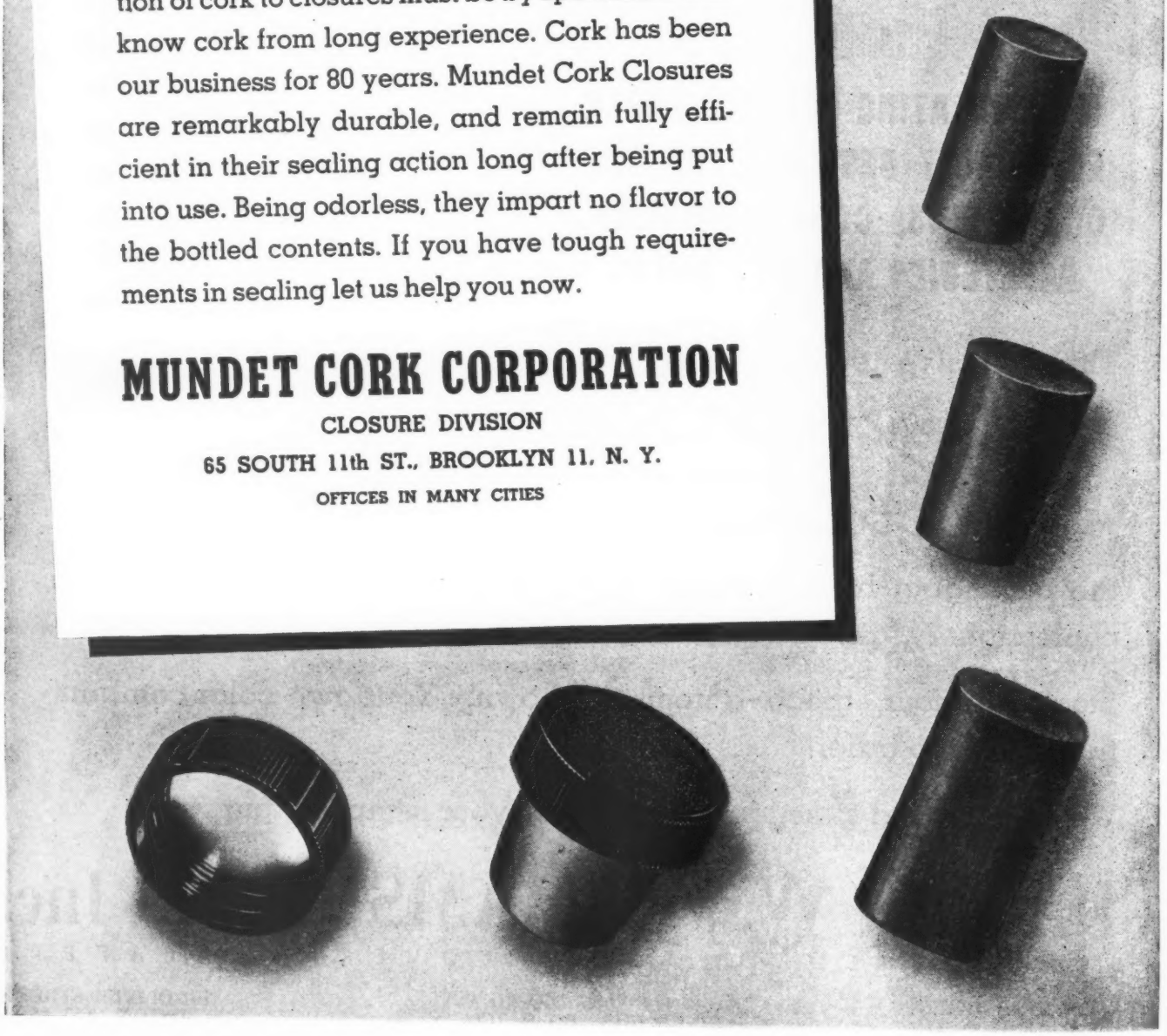
Closure Service is more than fitting a cork to a bottle. Our purpose is to secure the most practical cork sealing for the individual product. Cork in itself is one of nature's most unique materials, but, because it is produced and processed in different grades, for so many purposes, the application of cork to closures must be by specialists who know cork from long experience. Cork has been our business for 80 years. Mundet Cork Closures are remarkably durable, and remain fully efficient in their sealing action long after being put into use. Being odorless, they impart no flavor to the bottled contents. If you have tough requirements in sealing let us help you now.

MUNDET CORK CORPORATION

CLOSURE DIVISION

65 SOUTH 11th ST., BROOKLYN 11, N. Y.

OFFICES IN MANY CITIES



I'D LIKE TO SEE..

Yes, she wants to see before she buys. She likes transparent film packages through which she can see the actual merchandise.

As processed by Dobeckmun, in eye-compelling designs and colors, film packages attract her quick and favorable attention. She'll reach for your packages and remember them.

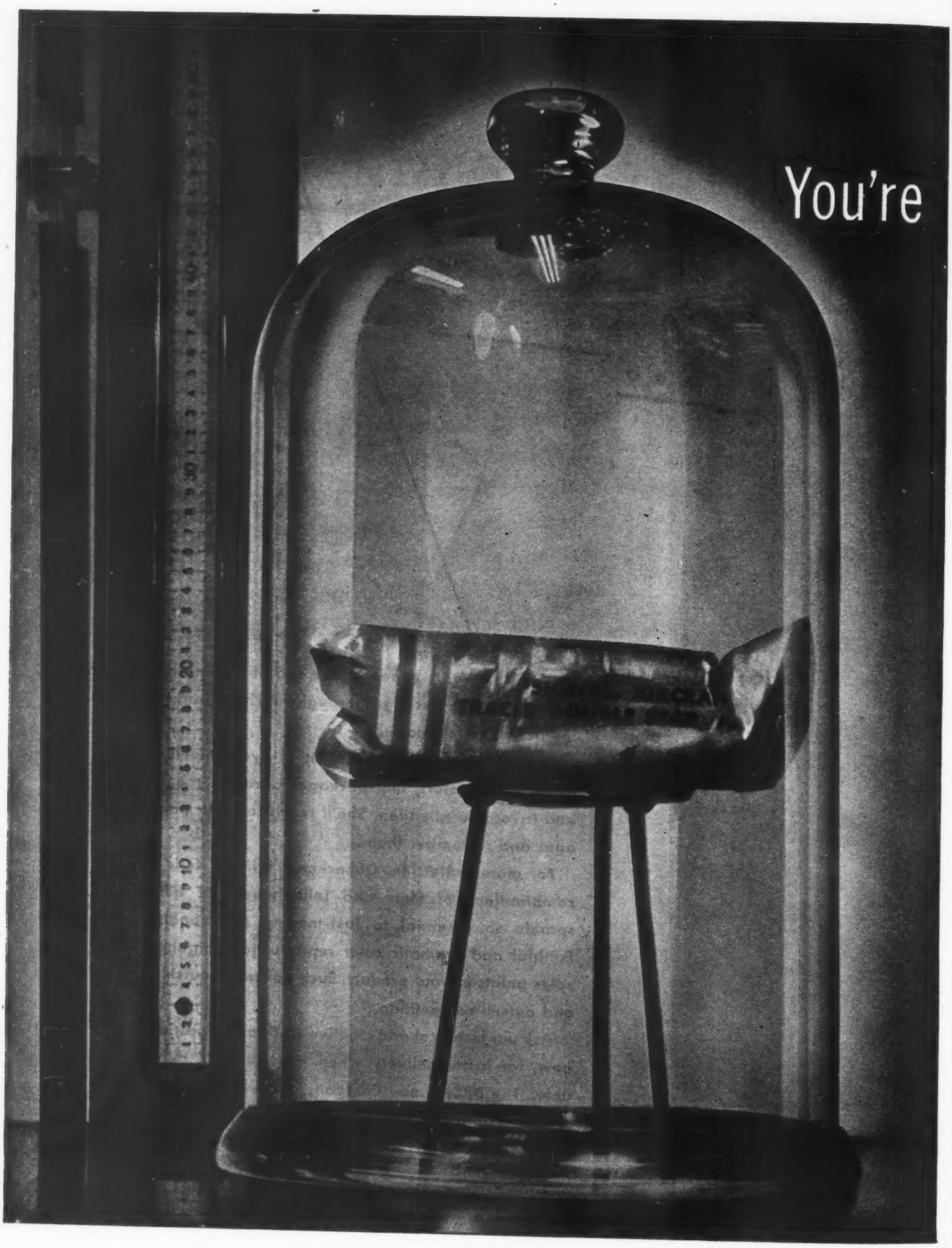
For more protection, Dobeckmun brilliant foils or combinations of films and foils have that quick sparkle so essential to fast-moving merchandise. Faithful and dramatic color reproductions highlight sales points of your product. Such packages outshine and outsell competition.

Ask our technical and creative staff for suggestions now, for faster delivery when materials are available. *The Dobeckmun Company, Cleveland 1, Ohio. Branches at Boston, Chicago, Los Angeles, New York, Philadelphia, San Francisco and Seattle. Representatives everywhere.*

DOBECKMUN

CLEVELAND PLANT

SELF-SELLING PACKAGES IN PROCESSED FILMS AND FOILS


You're

looking at

the substratosphere !

Yes—it is just a simple bell jar. But the air pressure in *this* particular jar exactly duplicates the atmosphere 8 miles above the earth.

The test being made helps determine the packaging specifications for the life-saving flares carried in high altitude bombers. It is one of hundreds of checks and counter-checks made daily in Reynolds Laboratory.

There are twelve highly specialized departments in Reynolds completely equipped, modern packaging laboratory . . . dedicated now to the single aim of developing better packaging for shipment of the matériel of war.

The needs of war have brought about packaging miracles! Undreamed of improvements have been made in the rolling, laminating and sealing of foil materials.

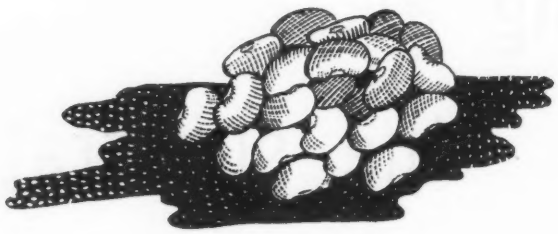
If you are interested in knowing how these new developments can help deliver your products to the public in better condition and with greater sales appeal than ever before—Reynolds technicians will be glad to tell you.

For 25 years the world's largest producer of foil!
Address inquiries to—Reynolds Metals Company, Reynolds Metals Building, Richmond 19, Virginia.

REYNOLDS METALS COMPANY

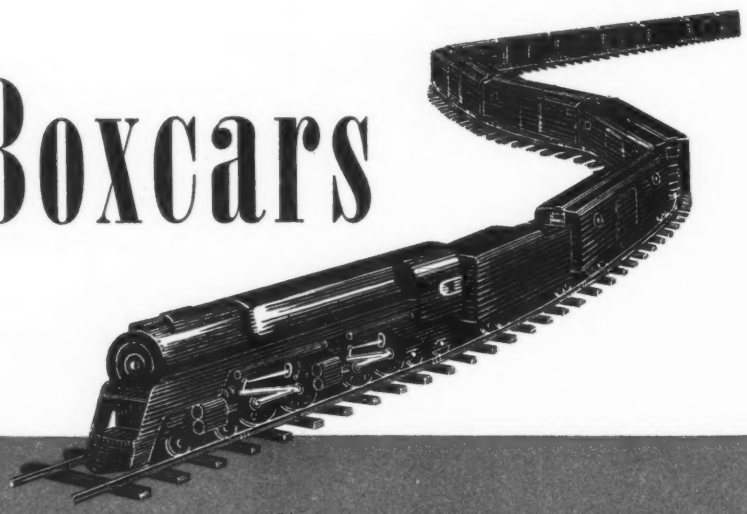
Leads the way in Foil Packaging

...from Beans



Twenty-five years of manufacturing paper bags for every conceivable purpose, plus the stepped-up experience brought by the unusual challenges of war's demands, will be behind every Central States' postwar product...Whether your packaging calls for maximum eye appeal, a special type of printed bag, a specially processed paper bag, or a bag for protection against water, weather or other hazards, our packaging experts have the practical, economical answer... Exclusive machines, designed by our own engineers, are producing bags and case liners for scores of purposes previously undreamed of... Postwar, an entire department, staffed by trained specialists, will be devoted to the research in and manufacture of bags made of new, light plastic materials...So, our war experience, which has brought bags for unusual purposes, has given us an invaluable background, better to tackle postwar problems..whether they be packaging beans or lining boxcars.

to Boxcars



Whether you require utility or eye appeal, or BOTH, Central States packaging experts can give you the most efficient economical solution to your packaging problems

CUSTOM DESIGNED PAPER BAGS • PRESSURE SEAL BAGS • WAXED PAPER BAGS
CASE LINERS • PLASTIC BAGS • RIGID TRANSPARENT CONTAINERS OF ALL KINDS

CENTRAL STATES PAPER & BAG CO.

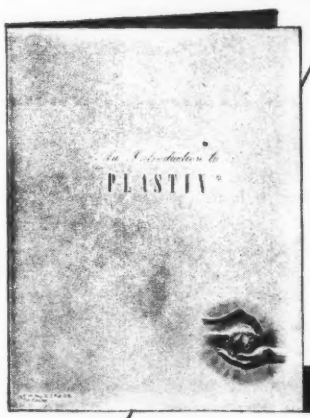
2600 NORTH BROADWAY, ST. LOUIS 6, MISSOURI, U. S. A.

CHICAGO, 520 N. Michigan Avenue • NEW YORK, 489 Fifth Avenue • DETROIT, 1951 East Ferry Street

PLASTIN*

VINYL-ALUMINUM

MOISTURE-VAPOR BARRIER



PRODUCTION OF PLASTIN **is currently devoted to filling the unprecedented military demands for this unprecedented moisture-vapor barrier, which surpasses all Type I barrier requirements for maximum load limits under Method II packaging.**

The time will come—perhaps very soon—when Plastin can fill *your* needs for positive protection against corrosion. Samples adequate for introductory and testing purposes are now available. Learn why Plastin is preferred to any other moisture-vapor barrier heretofore known. Send for folder containing description and small samples of Plastin.

PLASTIC FILM CORPORATION

PHONE: LEXINGTON 2-5458 • 475 FIFTH AVE., NEW YORK 17, N.Y.

*Patents Pending
Trade Mark Reg. U.S. Pat. Off.

FILL OUT AND MAIL TODAY!

PLASTIC FILM CORPORATION
475 Fifth Avenue
New York 17, New York

Gentlemen:

Please send a free copy of "An Introduction to Plastin" to:

NAME_____ TITLE_____

COMPANY_____

ADDRESS_____

For Essential Packing today . . . tomorrow . . .

Here are a few of the many Mehl Bags being produced today to afford the necessary protection of water-proofness . . . grease-proofness . . . or moisture-proofness—or the combination of all three for military parts and supplies while enroute and in storage.

Tomorrow—these bags will play an important part in your packaging program. You'll find the answer to many of your packaging problems in cellophane—laminated asphalt papers—laminated foils—special films or papers, alone and in combination from which Mehl Bags are being made . . . others will be added to meet industry needs.

** Remember the original Transparent Garment Bag, a Mehl patented development . . . and the Transparent Shirt and Novelty Bags that set a fast pace for the dry cleaning and laundry field in prewar days? These proved promotional aids, along with other Mehl Bags will be back when limitation orders are lifted. "It's in the bag—and you can see it!"*

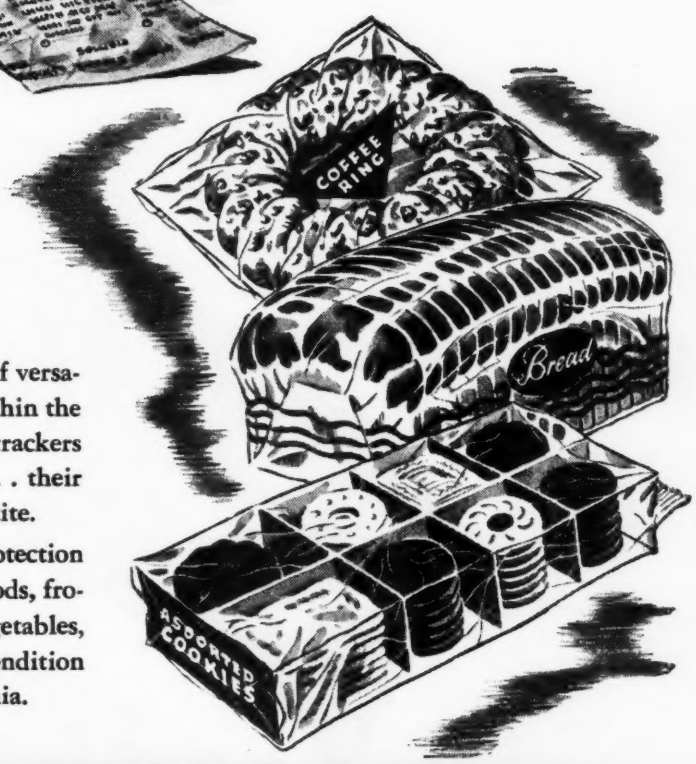
MEHL MANUFACTURING COMPANY

DIVISION OF SYDNEY-THOMAS CORP.

2351 FERGUSON ROAD, CINCINNATI 5, OHIO

277 BROADWAY, NEW YORK 7, N. Y.

SYLVANIA Means Cellophane ...it Guards Battle Rations



...Protects Essential Foods

Today, protecting food for our soldiers is one of versatile Sylvania cellophane's important jobs. Within the double walls of this ration bag...coffee, sugar, crackers and chocolate are kept safe from moisture . . . their freshness preserved for a fighting man's appetite.

Tomorrow more foods will have better protection because of such wartime advances. Baked goods, frozen foods, home-prepared picnic lunches, vegetables, meats and fruits will be fresher—in better condition because of such new developments by Sylvania.

SYLVANIA CELLOPHANE

Made only by SYLVANIA INDUSTRIAL Corporation

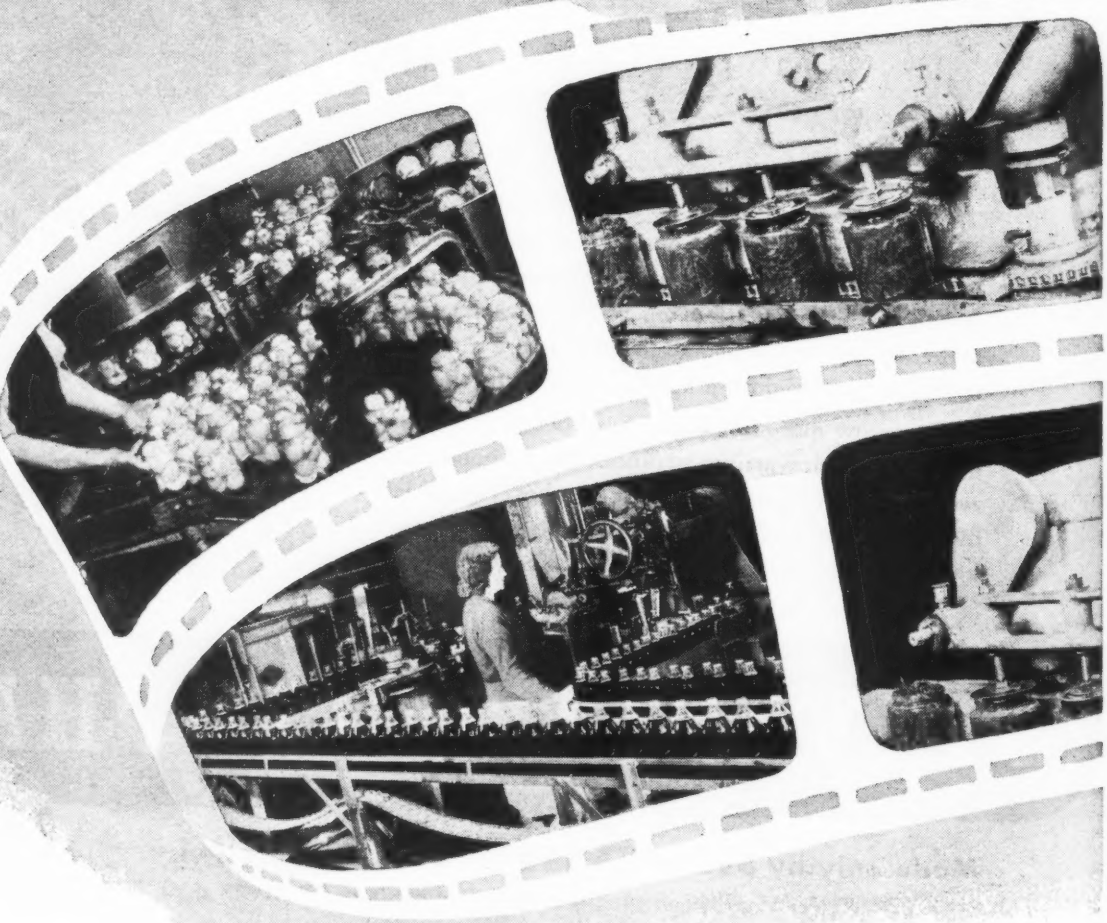
Manufacturers of cellophane and other cellulose products since 1929

General Sales Office: 122 E. 42nd St., New York 17, N.Y. ★ *Plant and Principal Office:* Fredericksburg, Va.

*Registered Trade Mark

HERE'S A SPECIAL "LIFT" FOR YOUR LOCAL SALES MEETINGS

Show the Sparkling Technicolor Film "GLASSING in DURAGLAS CONTAINERS"



GLASSING IN Duraglas CONTAINERS

Fortunately, films can travel even when conventions must stay at home.

This 16mm. sound color film shows a cross section of many typical food processing and packing operations with the container that gives Mrs. America a "Lift to Living" and provides a "Lift to Selling" to both packer and retailer. It's the story of modern container engineering and design combined with efficient food and package handling techniques.

Just write to the nearest Owens-Illinois Branch office or Toledo for details, giving us alternate dates when you can use it. Every print is busily making the rounds of people who have seen it or heard of it—and wish to show it to others. We will do our best to fit our schedule to yours. There is no charge for using the film.

OWENS-ILLINOIS GLASS COMPANY
TOLEDO 1, OHIO
Branches in all principal cities

Duraglas
TRADE MARK REG. U.S. PAT. OFF.
BOTTLES and JARS
Preserve, Protect and Sell by Sight

You'll welcome

COMPETITION

WHEN YOU PRESENT YOUR POST-WAR PRODUCT IN SEFTON'S "PROFIT PACKAGING"

You'll lead the way in the post-war race for customers when you dramatize your product with Sefton's "Profit Packaging." The practical, 3-advantage* string-opening can is but one of the many types of packaging that Sefton designers have created to help you meet competition. Look to Sefton to solve your post-war package problems!

*(1) *Factory-seals your product*
(2) *Opens easily*
(3) *Can be closed again.*

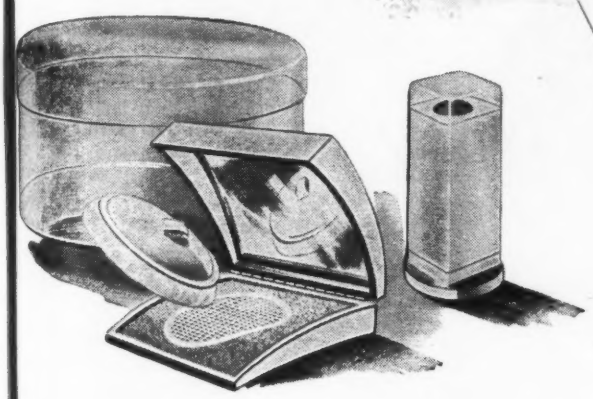
SEFTON

FIBRE CAN COMPANY

ST. LOUIS ····· NEW ORLEANS

DISTRICT OFFICES: • Los Angeles • San Francisco • Denver • Tampa • Chicago • Des Moines • New Orleans • Boston • Detroit • Kansas City • St. Paul Omaha • New York • Cincinnatti • Cleveland • Oklahoma City • Pittsburgh • Memphis • Nashville • Dallas • Houston • Salt Lake City • Seattle

Why a comb is big packaging news



Most of us take a comb more or less for granted. But to the cosmetic and drug industries, this comb is different. Made of the No. 1 postwar plastic—Styron (Dow Polystyrene)—it tells a story of appearance, quality, moldability, and price that will affect countless cosmetic and pharmaceutical packages. Combs like this, for example, in many hues of clear, transparent, or opaque Styron indicate the beauty possibilities of containers made from the same versatile plastic. Or, if you want a light, rugged packaging material, examine this comb for proof that Styron fills the bill. Special shaped boxes? Again the comb is a simple example of Styron's easy moldability.

These advantages, plus other distinctive properties,* suggest the advisability of finding out *now* how Styron fits into your postwar packaging plans.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN
New York, Boston, Philadelphia, Washington, Cleveland, Detroit, Chicago, St. Louis, Houston, San Francisco, Los Angeles, Seattle

PRESENT AND POTENTIAL USES—Cosmetic and pharmaceutical boxes and containers of all types; funnels; bottles; closures; food handling equipment. Also used for other products; jewelry; advertising items; refrigerator parts; pens; pencils; chemical apparatus; lenses; decorative objects and trim.

**PROPERTIES AND ADVANTAGES*—Beautiful, clear, translucent or opaque; resistant to acids and alkalies; stable at low temperatures; broad color range; low specific gravity providing more moldings per pound; low water absorption.

STYRON

(DOW POLYSTYRENE)

From the only privately owned synthetic styrene plant with sufficient facilities to care for molders' postwar requirements.

DOW

PLASTICS

STYRON • ETHOCEL • ETHOCEL SHEETING
STYRALOY • SARAN • SARAN FILM • STRIPCOAT

PAINTING INSIGNIA ON NEWLY CAMOUFLAGED JEEP AT HOLTZ, BELGIUM

BEST SELLERS

THIS year's best-selling car is the Jeep . . . and as usual, every year—in collapsible tubes—it's SHEFFALLOY, *Sheffield Process* Tubes. Wherever the indispensable jeep may be found in just about every battlefront of the world, there, too, you'll probably find these tougher SHEFFALLOY Tubes. They are serving dependably as containers for medicinal and pharmaceutical ointments, tooth paste, shaving cream, and other vital requirements of our fighting forces. Only the toughest, most dependable tube you can buy is good enough for your product. That means *Sheffield Process* Tubes and VINICOTE . . . a series of over 50 Inner Coatings. Now many products unfriendly to collapsible tube metal can safely be packed in these better liked containers. When you make plans for *your* future "best sellers" . . . remember *our* best sellers, *Sheffield Process* Tubes and VINICOTE.

Sheffalloy
TRADE MARK REGISTERED
SHEFFIELD PROCESS
TUBES

NEW ENGLAND COLLAPSIBLE TUBE CO.

3132 S. CANAL STREET, CHICAGO 16 • NEW LONDON CONN. • W. K. SHEFFIELD, V. P., 500 FIFTH AVENUE, NEW YORK 18
THE WILCO COMPANY, 6800 McKINLEY AVE., LOS ANGELES

Suit of Armor

FOR A VITAL AIRCRAFT PART

LUMARITH*

Spiral Wound Containers for Strength and Lightness

PACKAGING delicate carburetor mixture controls for shipment to remote places was a real headache to a leading war production plant. Complaints poured in about parts ruined through dents from shipping hazards.

What to do? The walls of this part are only .003" thick, almost frail as an eggshell. Naturally the producer bought the sturdiest packaging available—or so he thought.

Then along came Precision Paper Tube Company of Chicago with a container of spiral wound Lumarith—and the parts maker's troubles were over. Now these protective Lumarith tubes carry delicate controls all over the world.

The package is 3" long and 1½" diameter. Discs of Lumarith are snapped into the base and cover and the ends are spun over to make a tamper-proof seal. The package is rigid—and so strong that on end it can support a man weighing 200 lbs.

Look into spiral wound Lumarith for any package needing exceptional strength and lightness and which can be tubular. Available in round, square or elliptical shapes and can be fabricated on standard paper-tube packaging machines. Consult the Sales Development Department of Celanese Plastics Corporation, a division of Celanese Corporation of America, 180 Madison Avenue, New York 16, N. Y.

A Celanese Plastic*

*Reg. U. S. Pat. Off.

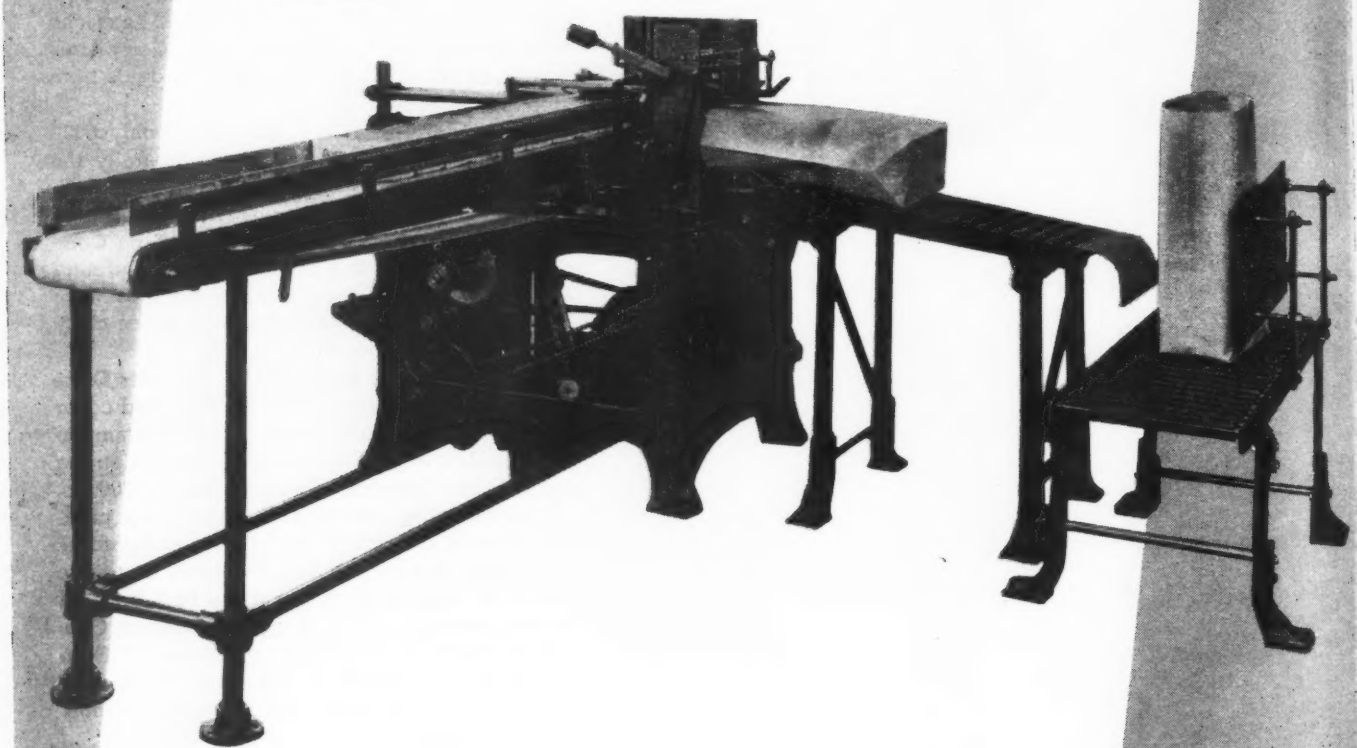
A SWEET JOB OF BAG PACKING

This picture shows an installation of a bag packing machine. We designed it and built it for use in various sugar refining plants.

The machine handles small sized paper bags, collects and packs them into the larger sized shipping bags.

The sugar industry has found this machinery extremely useful in their packaging operation. Similarly, other Standard-Knapp machines have been especially developed for specialized industries. This is the nub of our service: we are essentially package machinery development engineers.

Our long experience gives us a sound basis of knowledge upon which we will be glad to draw to meet your machinery requirements. Our manufacturing facilities are more than ample to produce the machines we design.



STANDARD-KNAPP CORP.

MANUFACTURERS OF CASE SEALING, CASE PACKAGING AND CAN LABELING MACHINES

FACTORY and GENERAL OFFICES — PORTLAND, CONNECTICUT

570 Lexington Avenue, NEW YORK 22, N. Y.
221 North LaSalle St., CHICAGO 1, ILL.
145 Public Square, CLEVELAND 14, OHIO
300 Seventh Street, SAN FRANCISCO 3, CALIF.
420 S. San Pedro Street, LOS ANGELES 13, CALIF.
3224 Western Avenue, SEATTLE 99, WASH.
1208 S. W. Yamhill Street, PORTLAND 5, OREGON
Paul Brown Building, ST. LOUIS 1, MO.

Windsor House, Victoria Street, LONDON, ENGLAND

DISTINCTION...

STYLE...BEAUTY...

PRODUCT IDENTITY...IN

Beetle

Distinctive BEETLE Containers and Closures for Charles of the Ritz Cream Rouge, Cake Rouge, and Eye Shadow. Molded by the A. J. & K. Company.

All the qualities you want for your line can be incorporated into molded BEETLE* plastic containers and closures. For BEETLE can, and does, help sell cosmetics, beauty preparations, and other items that depend on popular appeal and approval for initial as well as repeat sales.

With BEETLE you have the assurance of a packaging material that is chemically inert, dimensionally stable, resistant to wear, impact, and abrasion. You have, too, all the colors of the rainbow at your command. And BEETLE packages can be produced in large quantities at little cost.

Ask your molder about BEETLE, *the Plastic That's ALL Color in ALL Colors*, for your packaging or design requirements, or write us direct.

*Reg. U. S. Pat. Off.

AMERICAN CYANAMID COMPANY

PLASTICS DIVISION • 30 ROCKEFELLER PLAZA • NEW YORK 20, N. Y.

Cyanamid Plastics

Beetle Melmac·Melurac
Laminac·Urac

A MAN *is judged by the company he keeps!*

A MAN is judged by the company he keeps. And so a company is judged by the companies it services. Take Trans-Pac, for instance, and scan its roster of important clients. We're proud to service organizations like these. Proud to have them endorse our own high standards by letting us package their products!

Soon many new and superior packaging materials will be available. Whether it's pliofilm or glassine lamination, we can plan your package needs now. In addition to our own staff, we also work closely with the engineering and research divisions of the leading manufacturers of packaging supplies.

Our long experience dealing with diversified products enables us to supply the best in modern packaging. Post-war packaging plans can formulate, however, only as soon as facilities are available. Until that time, we should be pleased to advise you on your particular packaging needs.

TRANS-PAC SERVICES, INC.
PACKAGES PRODUCTS
for the following organizations:

EASTMAN KODAK CO.
CAMPBELL'S SOUP CO.
J. C. ENO, INC.
BLOCK DRUG CO., INC.
CHEF BOY-AR-DEE, INC.
FOSTER MILBURN CO.
THE NORWICH PHARMACAL CO.
LEADER NOVELTY CANDY CO., INC.
GENERAL MILLS, INC.
C. J. VAN HOUTEN & ZOON, INC.
THE ANACIN CO. "WHITEHALL"
CARTER PRODUCTS, INC.
BREAKSTONE BROS., INC.
MARLON CONFECTIONS CO.
JOHNSON & JOHNSON INTERNATIONAL
WALLACE & TIERNAN CO., INC.
HUMPHREY'S MEDICINE COMPANY
DR. D. JAYNE & SON, INC.
KORAL LABORATORIES, INC.
THE ARNER CO., INC.
THE KNOX CO.
DORSET FOODS, LTD.
CONFECTION CABINET CORP.
AMERICAN DIETAIDS CO., INC.
UNION FOODS PRODUCTS COMPANY
ROMANOFF CAVIAR COMPANY

TRANS-PAC SERVICES, INC.

602 WEST 52ND STREET, NEW YORK 19, N. Y.

Artist: Fernand Leger, native of France

FRANCE REBORN

Supplies in paper packages aided France. When peace is won, we will show you many new and advanced packaging techniques developed to meet the demands of war.

CONTAINER CORPORATION OF AMERICA
CHICAGO AND 22 OTHER CITIES

SAVE WASTE PAPER

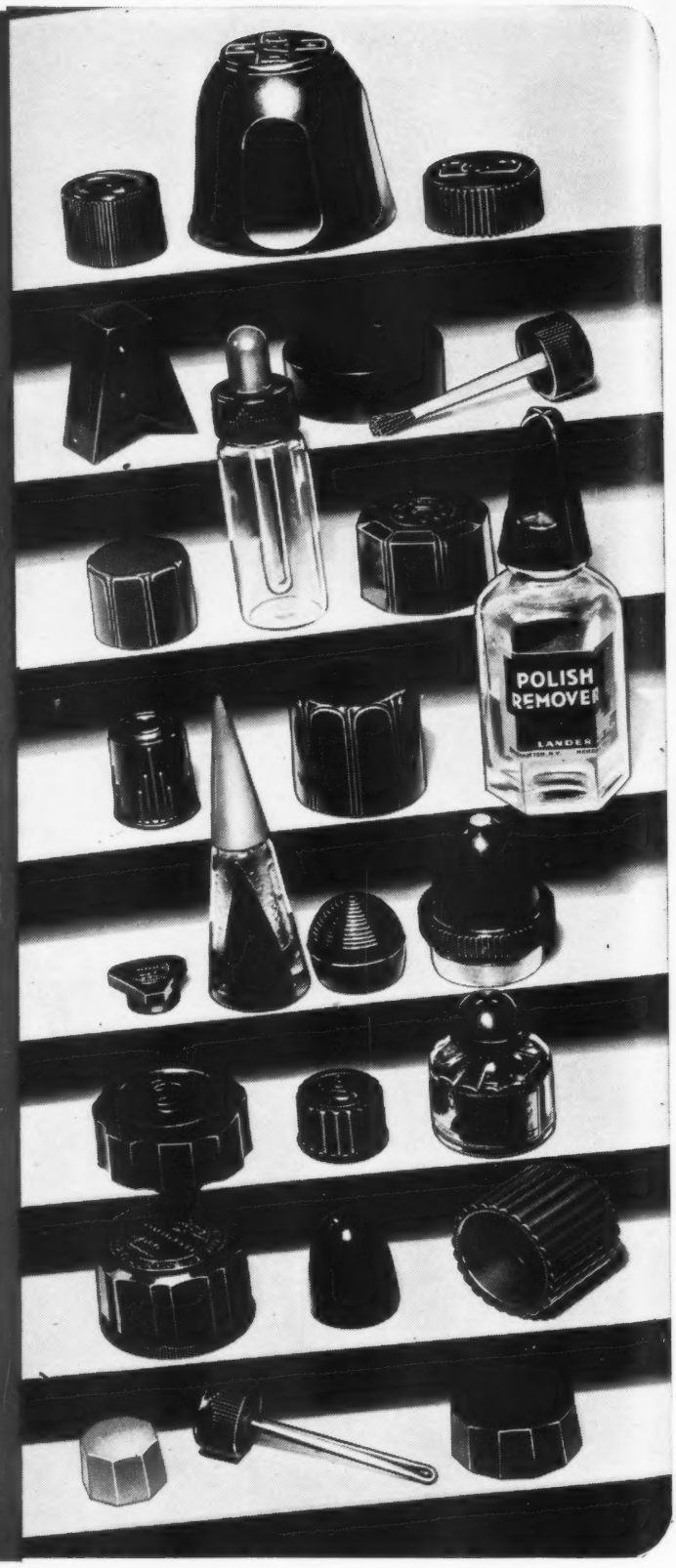
HERE'S WHY

"More Closures Have Been Made From Durez Than From Any Other Plastic Material"

For years closure manufacturers have been relying on Durez phenolic plastics because the natural versatility of these materials permits their unrestricted use in manufacturing closures of all sizes and shapes—for all purposes.

Such properties as non-bleeding, eye-appealing finish, excellent moldability, and resistance to moisture, chemicals, alkalies and temperature extremes—render Durez molding compounds invaluable to imaginative designers who require the utmost versatility in a material in order to translate their ideas into profit-making merchandise.

As specialists for the past quarter century in the production of phenolic plastics, Durez technicians possess the broad experience necessary for giving competent guidance to the closure manufacturer in search of the plastic material which precisely fits his job. The benefits which this rich background and a voluminous collection of proven data can offer, are available to you at all times. Durez Plastics & Chemicals, Inc., 486 Walck Road, North Tonawanda, New York.



Wartime restrictions are still limiting the availability of our materials . . . both in volume and color. However, now is the time to plan for the future.

DUREZ

PHENOLIC RESINS

- MOLDING COMPOUNDS
- INDUSTRIAL RESINS
- OIL SOLUBLE RESINS

PLASTICS THAT FIT THE JOB

FABRICS by ADAR

SAMPLE OF SABLEFELT

Sablefelt . . . exquisite packaging fabric for glamorous outside, for lovely interiors.

Cushonite . . . the ideal packaging fabric for delicate instruments or heavy machinery. Protection from shock and vibration. Acts like a perfect cushion. Made in a wide range of thicknesses. Thin Cushonite for delicate instruments . . . heavy Cushonite for heavy duty.

Zatone . . . a unique, exclusive fabric which will glamourize your product.

ALL FABRICS AVAILABLE FOR IMMEDIATE AND NEARBY DELIVERIES IN MANY SHADES.

Come and visit our showrooms

ADAR CO.

39 W. 32nd St.
New York 1, N. Y.
PEnn 6–0945

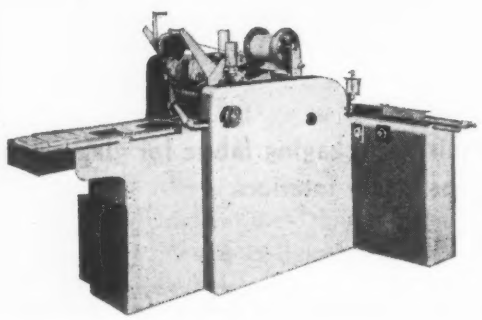
for Moisture-proof PROTECTION

CELLO-WRAPS

with or without Tear-Strips

AT 250 *or more* PER MINUTE!

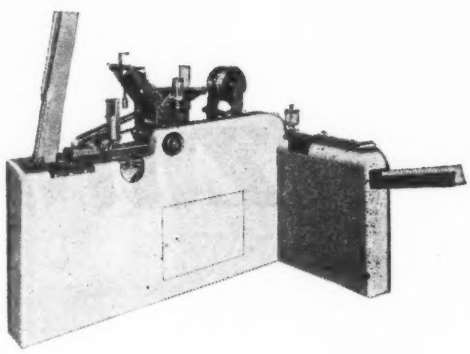
The *basic* SCANDIA patents are your complete assurance that Scandia cello-wrapping units are economical, *FAST* and dependable. Watch a Scandia wrapping machine work, and you'll be convinced that one of the Standard Scandia units gives you unequalled value . . .



with Electric Eye Attachment

Scandia Fully Automatic Cello-wrapping machine equipped with electric eye for registering printed wraps, and tear-tape attachment.

with Revenue Stamp and Tear-Tape Attachment



Scandia Special Fully Automatic Cello-wrapping machine equipped for applying Revenue or Union Stamps and Tear-Tape.

SAVE TIME AND MONEY

*WITH A STANDARD SCANDIA**

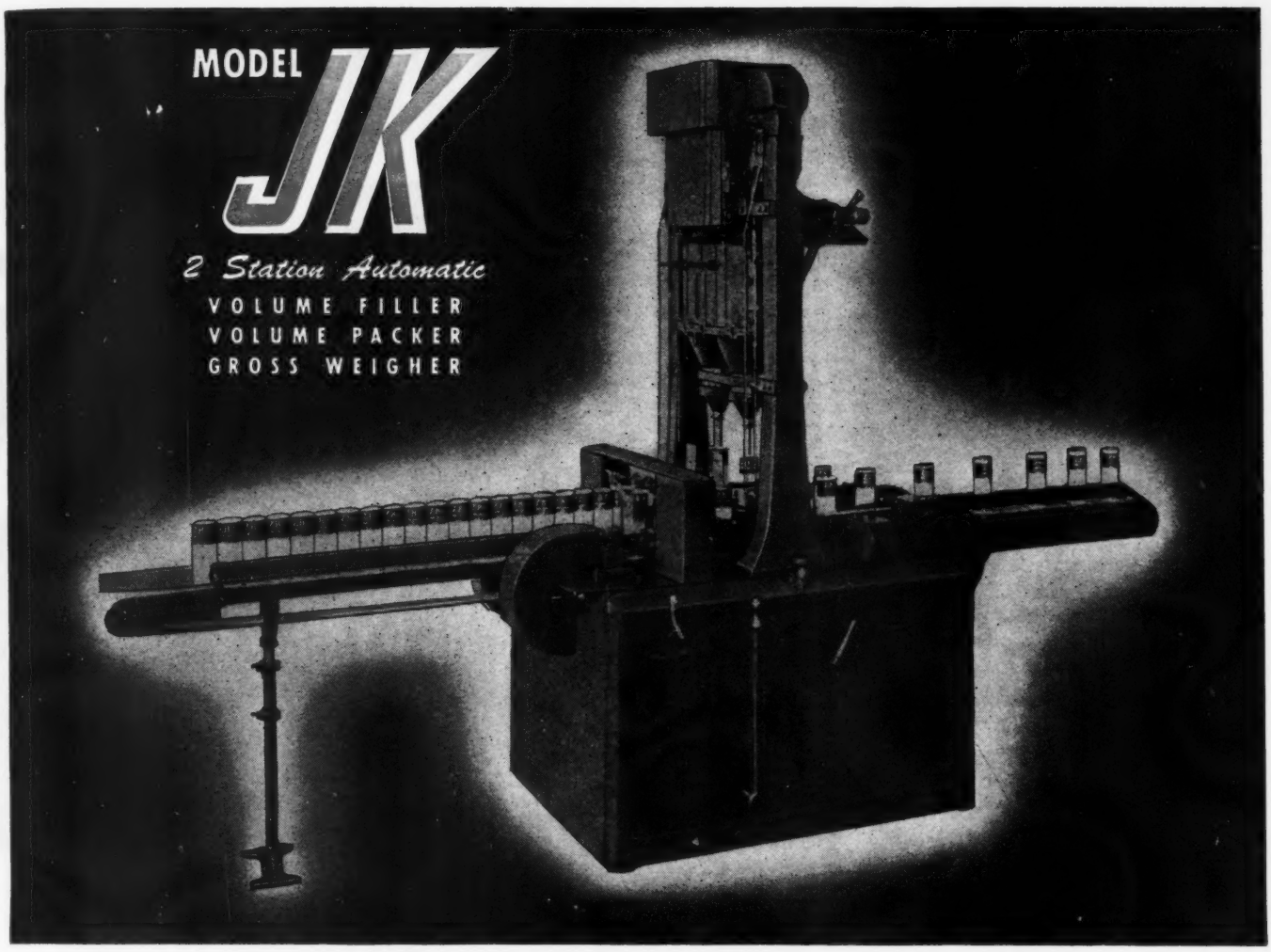
Use Scandia cello-wrap units for ANY products that must be protected against *moisture;* or against the *loss* of moisture. Widely used in drug, tobacco, bakery and candy field; also for protection of razor blades, etc.

Ask for Complete Details —→

* Manufactured under Bronander Patents.

Scandia MANUFACTURING CO.

NORTH ARLINGTON NEW JERSEY



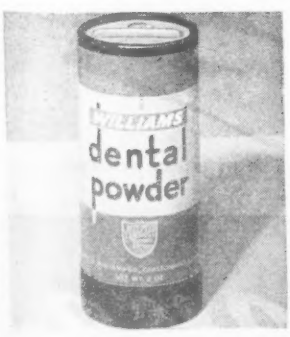
. . . for all types of powdered, granular and paste materials

The Model JK is an Automatic Packer that will also operate as a Volume Filler or Gross Weigher. This machine fulfills every requirement for advanced means of automatically handling powdered, granular and paste materials of almost all descriptions.

The Model JK has two filling stations. When the machine is used as an Automatic Volume Packer the empty containers are elevated, causing the actual filling to take place under the amount of controlled pressure suitable for the type of material and the size of container into which it has to be packed. This same principle is used when the machine is equipped as a Packer-Weigher, except that the main portion of the contents is packed under pressure, the remainder finished by weighing for accuracy. When the machine is used as a Volume Filler or Gross Weigher, provision can be made to incorporate a vibrating type of settling device to settle the material after filling.

The machine can be equipped for intermittent conveyor motion to facilitate handling of oval or irregularly shaped containers. With this intermittent motion, the conveyor moves just enough to deliver one container at the transfer station, thus preventing climbing and piling up of the containers.

The many new automatic features, plus the speed and accuracy of the JK, soon pay for the machine through savings on labor costs alone. It will pay to get full details and specifications — there are many features never available before — write today for bulletin which gives complete data on the Model JK!



Filled automatically on the JK at the rate of 60 per minute.

Send U.S. details on any of your packaging problems—we have the machines and the engineering background to help solve them.

US *Automatic Box Machinery Co. Inc.*

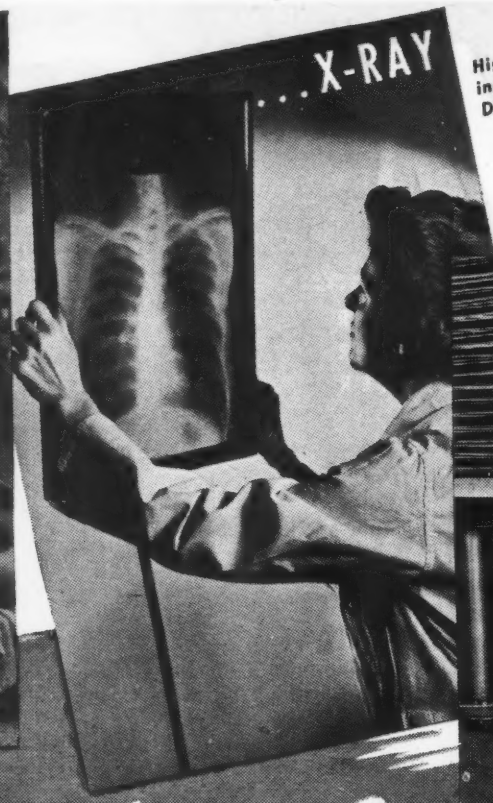
Owning and Operating

NATIONAL PACKAGING MACHINERY CO. • CARTONING MACHINERY CORP.

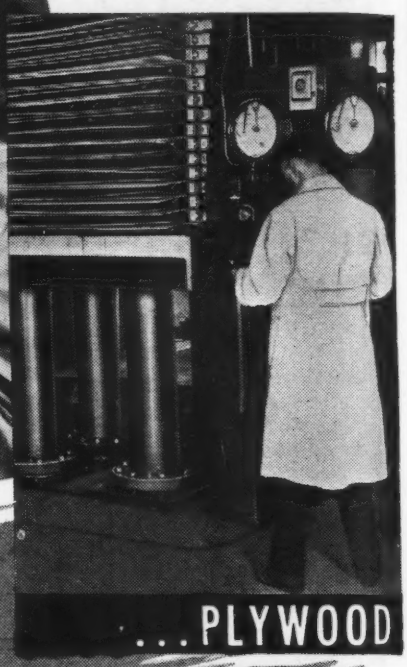
18 ARBORETUM ROAD, ROSLINDALE, BOSTON 31, MASS.

Branch Offices: NEW YORK CLEVELAND CHICAGO
LOS ANGELES (KRUGH EQUIPMENT & SUPPLY CO.)

Sterilization of plasma needles, visibly checked . . . with Diafane.



Highly technical packaging of X-ray film . . . with Diafane.



Plywood press production increased 100% . . . with Diafane.

Diafane

DIAFANE

EVERYWHERE BUT NOT A POUND TO SPARE

When a vital peace-time packaging material becomes essential for many strange uses all over the world — it's news. Good news for our war effort; bad news for many manufacturers of packaged goods.

Production of Diafane has doubled in a few years . . . and there still isn't a pound to spare for new customers. But now is the time to get experimental samples. Test Diafane on your machines and get ready to use this exceptional packaging material when the time comes.

RIEGEL PAPER CORPORATION

342 Madison Avenue • New York 17, N. Y.

Also sold by The Detroit Wax Paper Co., Waxide Paper Co., and Western Waxed Paper Co.

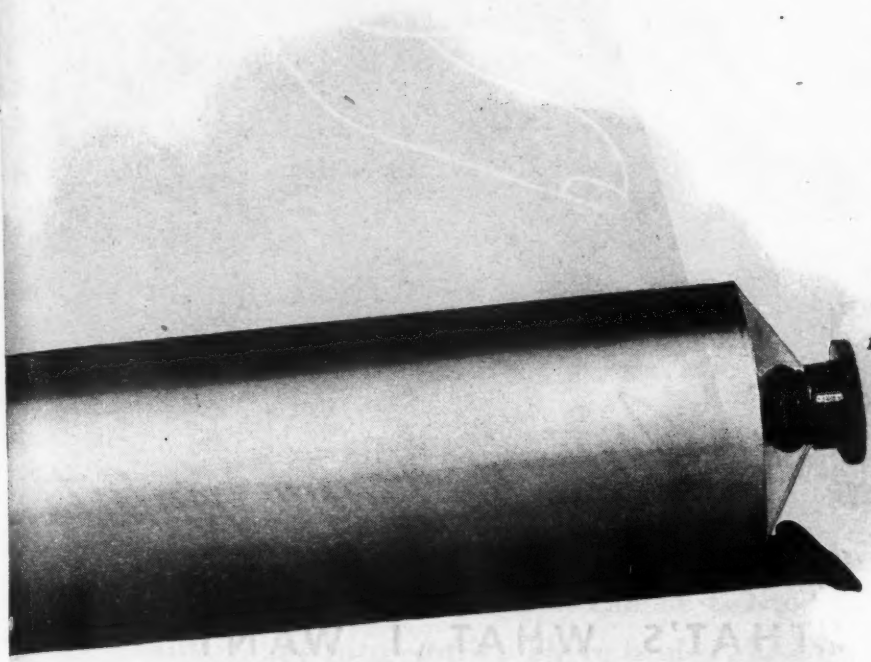
142

Riegel's Diafane

Today · *Protection, Convenience for Vital War Aids*

Tomorrow · *Protection, Convenience and Appeal for your Peace-time packages... creams, pastes, powders*

WITH WIRZ COLLAPSIBLE METAL TUBES



The protection and convenience characteristics of WIRZ Collapsible Metal Tubes make them the ideal container for vital ointments, lubricants and special war aids for our Armed Forces... over ninety percent of our total tube production is on these war "musts." Civilian deliveries give way for these important war items. War Orders come first... no one questions that.

When Peace-time products have the right-of-way again, you can add good appearance to protection and convenience... and WIRZ Tubes will protect your product, your brand name and your market.

WIRZ Tubes are practical in different sizes for a variety of products... with suitable wax or lacquer linings to combat corrosion and seepage. The WIRZ Mono-Pak, one-application tube, makes an excellent merchandising unit. Can be hermetically sealed, requires no capping or labeling. Put WIRZ Tubes in your post-war packaging plans.*

*Registered Trade Mark

Give an extra push now—buy more War Bonds

New York 17, N.Y. 30 E. 42nd St. · Chicago 4, Ill. 80 E. Jackson Blvd. · Memphis 2, Tenn. Wurzburg Bros. · Havana, Cuba Roberto Ortiz Planos

★ A. G. SPILKER { Los Angeles 14, Calif., 1709 W. 8th Street. (EXposition 0178)—Also Danville, Calif. ★

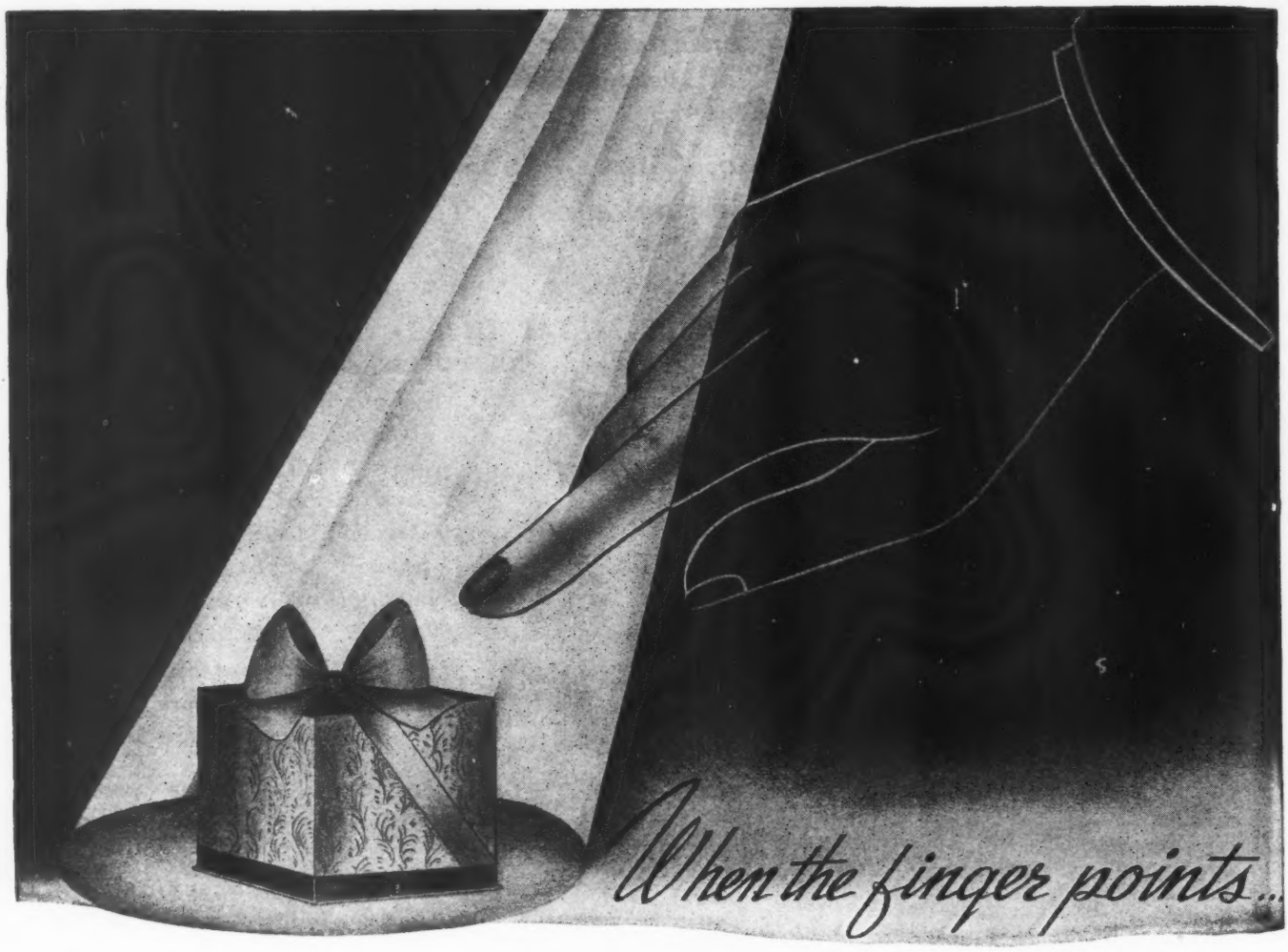
COLLAPSIBLE METAL TUBES • LACQUER LININGS • WAX LININGS • WESTITE CLOSURES
HOUSEHOLD CAN SPOUTS • METAL SPRINKLER TOPS • COMPRESSION MOLDING

A·H·WIRZ, INC.

Established 1836

CHESTER, PA.

EXPORT DIVISION—
751 DREXEL BUILDING, PHILADELPHIA 6, PA.



AND SAYS, "THAT'S WHAT I WANT"

it will be a MARVELLUM Package Paper that supplies the sales magic.

In the surge of post war competition, it will be packages spotlighted by their design, color and materials that will dominate the sales counters and the retailers' shelves.

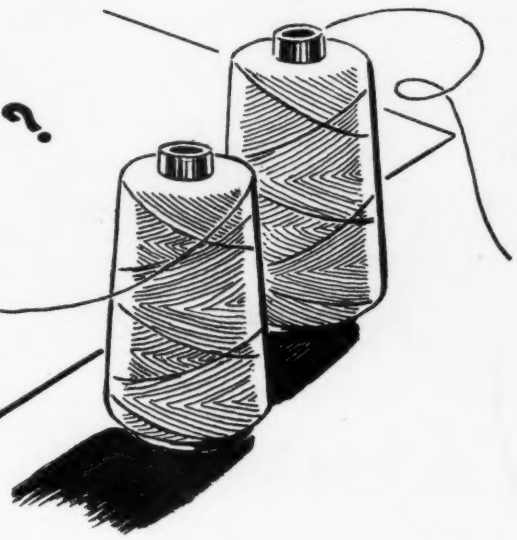
The MARVELLUM Creative Division has for long burned midnight oil in originating for post war demands, a series of Papers Distinctive as totally new in conception as the post war era in which they will play an important part.

Right now, our Manufacturing Division is continuing to make remarkably prompt deliveries on many items — other items are somewhat delayed. But the war is still on.

PAPERS DISTINCTIVE

THE *Marvellum* COMPANY
HOLYOKE MASSACHUSETTS

COULD THIS BE GLASS?

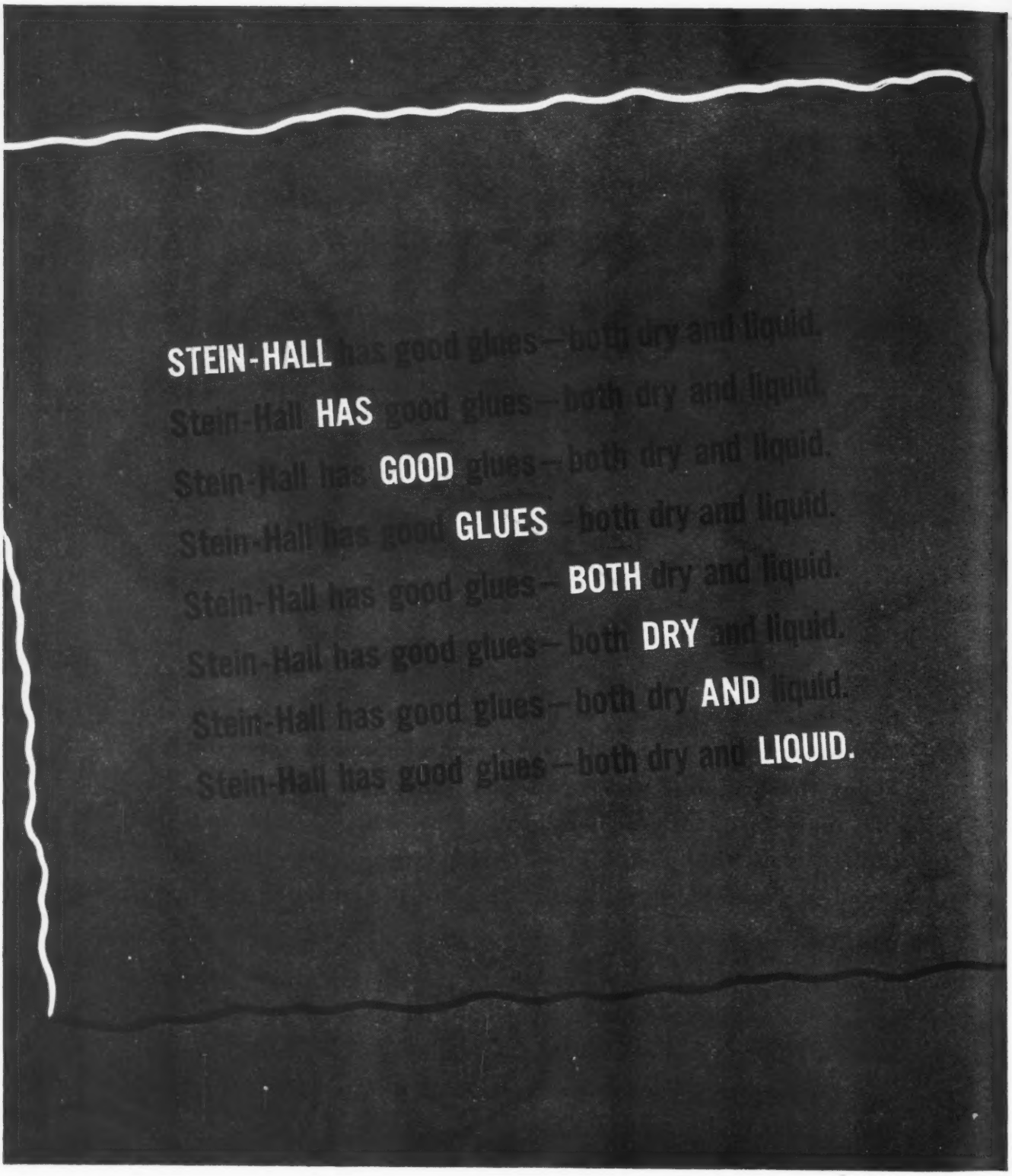


Most of us think of glass as a brittle material. For 4000 years that was the only form of glass we knew. Recently, research laboratories have produced many new and amazing types of glass. Today there is glass which can be twisted into yarn, woven like silk, made into cloth. There is also glass which can be bent like rubber, glass that floats, glass that bounces, glass that can be sawed and nailed. Seemingly there are no limits to the possibilities of glass.

Manufacturing these newer forms of glass is a highly specialized field. So, too, is the manufacture of fine glass containers . . . a field in which Carr-Lowrey has specialized since 1889. That is why Carr-Lowrey containers have long received an A-1 rating among men who know glass best.

CARR-LOWREY GLASS CO.

Factory and Main Office: Baltimore, Md.
New York Office: 500 Fifth Ave.
Chicago Office: 1502 Merchandise Mart



79 YEARS OF ADHESIVE SERVICE

STEIN SH HALL

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250 VAN HORNE STREET • TORONTO, CANADA

EST. 1866

LABORATORIES AT: NEW YORK
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Passed.. BY THE PASSING PARADE

Don't let your product get caught in the backwash of onrushing merchandising trends! The emphasis in the days ahead will be on mass-display...self service...and consumer convenience...and your package will be a major sales factor. ☆ Stop the consumer with a package that has color and attention-compelling design! Give your package new protection, greater convenience, and the eye and appetite appeal it will need to sell itself. Milprint has the experts and designers to inject these qualities in your package...Consult with us today! Insure your product against being Passed . . . by the Passing Parade.

★ Sales Offices at • New York Chicago • Boston • San Francisco Philadelphia • Grand Rapids Los Angeles • Cleveland • Dallas Minneapolis • Cincinnati • Atlanta Pittsburgh • St.Louis • Indianapolis Kansas City

MILPRINT Inc.

PACKAGING CONVERTERS • PRINTERS • LITHOGRAPHERS

PLANTS AT MILWAUKEE • PHILADELPHIA • LOS ANGELES • TUCSON

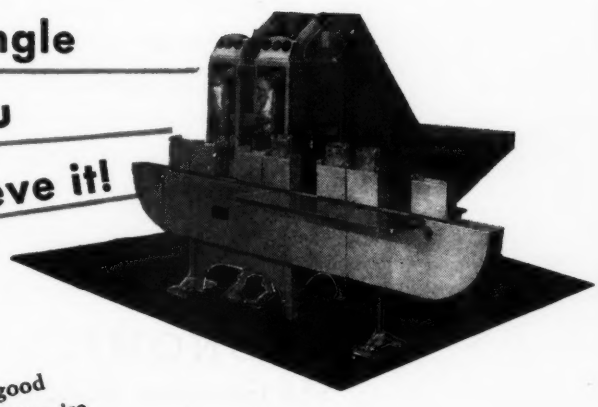
MEMBER AUDIT BUREAU OF CIRCULATIONS

PLASTICS CATALOG

THE ENCYCLOPEDIA OF PLASTICS
122 EAST 42nd STREET · NEW YORK 17, N. Y.

a new high ...in packaging accuracy!

It's uncanny — this Triangle ELEC-TRI-PAK — you almost have to see it to believe it!



USERS of Triangle ELEC-TRI-PAKS are amazed at their extreme accuracy. One machine actually weighs and fills short pretzel sticks to accuracies within 2 or 3 sticks per 10 ounce package!

ELEC-TRI-PAKS are versatile too . . . they do as good a job on weighing rice as on sandwich cookies. They're fast, easy to operate, they save labor. So gently do they handle products that they're even used to package potato chips without breakage. And . . . they're available in a variety of models for packaging from 15 to 80 packages per minute, and more.

For a new high in packaging efficiency, reduced costs, time and labor savings, as well as almost unbelievable weighing accuracy . . . here is your answer . . . a Triangle ELEC-TRI-PAK. **Write for details . . . TODAY!**

ARMY E NAVY

TRIANGLE PACKAGE MACHINERY CO.

907 NO. SPAULDING AVE., CHICAGO, 51, ILL.

Sales Offices in: New York; Los Angeles; Dallas; San Francisco; Denver; Cleveland; Birmingham; Memphis; North Quincy, Mass.; Montreal, Can.

NOTICE

Packaging Production Capacity Available

We have available high-speed automatic equipment to package dry powders in folding cartons for some other company.

Facilities for mixing, filling, weighing, but not labeling. Can handle finely-powdered or irritating chemicals with best dust-collecting equipment recently installed.

Have been handling cartons 1¼ by 2¼ by 3¼, but machines can be altered to handle cartons of other dimensions. Equipment located in Brooklyn, New York.

ECONOMICS LABORATORY INC.
914 Guardian Building St. Paul 1, Minnesota

RUMFORD

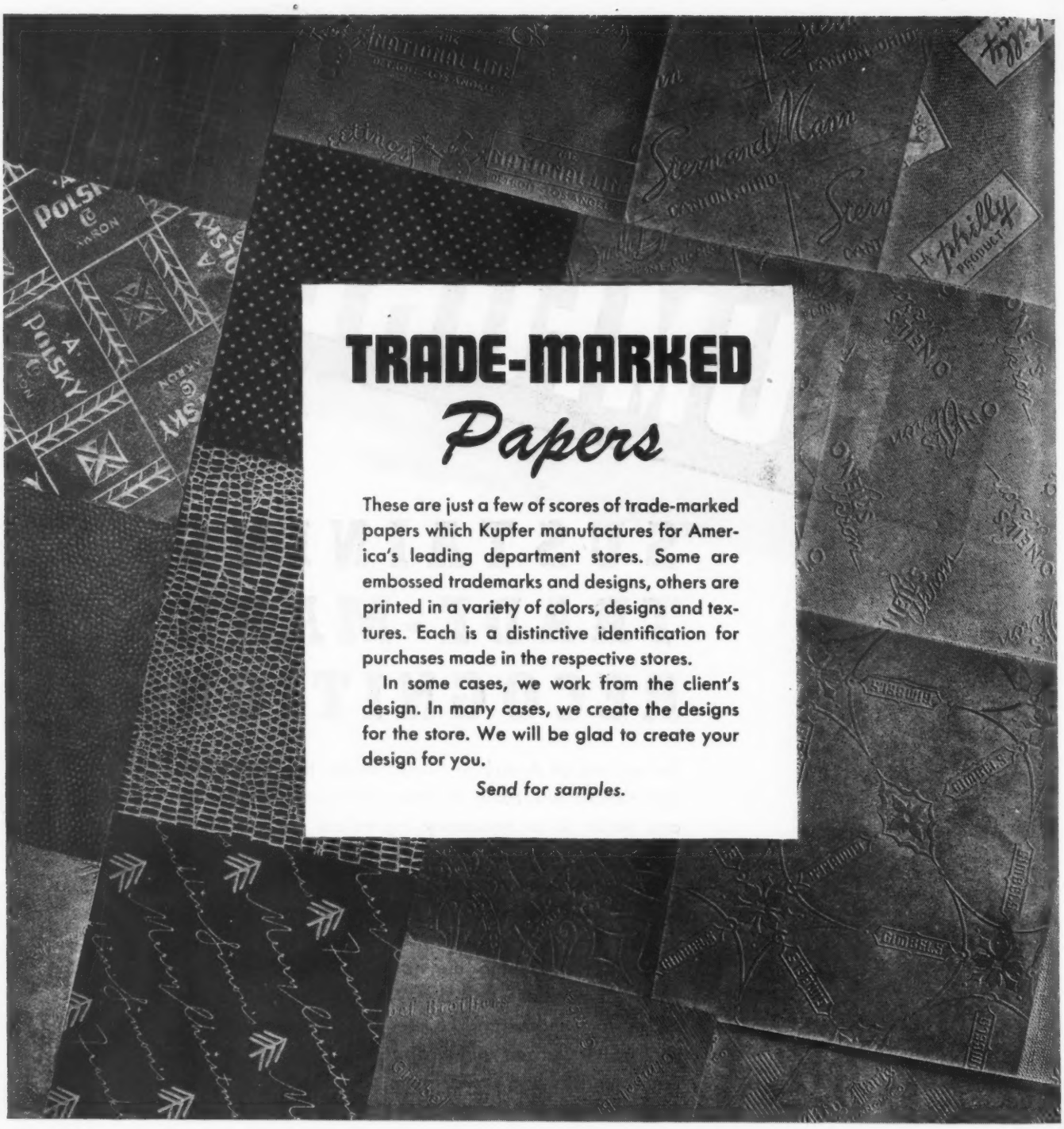
SUSTAINING TRADE-MARK RECOGNITION

To millions of American homemakers, this RUMFORD trade-mark has come to mean constant high quality and value in a necessary ingredient for successful cooking: RUMFORD BAKING POWDER. For many years it has been our happy privilege to help create and sustain this recognition and acceptance by developing and producing advertising and display material for keeping the name RUMFORD alive at points of purchase and use. We can help YOU plan NOW for window and counter displays, window and wall posters, labels and wrappers, booklets and folders, calendars and similar items, to meet the intensive postwar selling in prospect for American industries.

FORBES LITHOGRAPH CO.

NEW YORK CLEVELAND CHICAGO ROCHESTER

P. O. Box 513 Boston 2


TRADE-MARKED
Papers
These are just a few of scores of trade-marked papers which Kupfer manufactures for America's leading department stores. Some are embossed trademarks and designs, others are printed in a variety of colors, designs and textures. Each is a distinctive identification for purchases made in the respective stores.
In some cases, we work from the client's design. In many cases, we create the designs for the store. We will be glad to create your design for you.
Send for samples.

KUPFER BROS. CO.

Manufacturers of Surface Coated Papers

4 ASTOR PLACE, NEW YORK 3, N. Y.

Est. 1845

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KUPFER BROS. PAPER CO.
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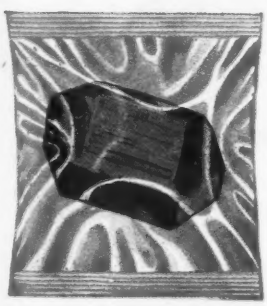
Southwest Representatives:
MODERN PACKAGINGS
IRWIN-KEASLER BLDG., DALLAS 1, TEXAS

SNIP IT, SEAL IT, SHIP IT!

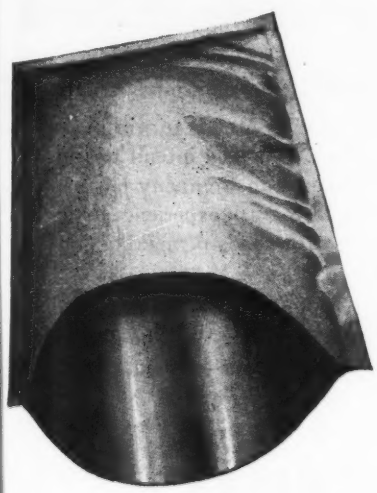
in Traco "All-Size" Bags

Tubular Form—1000 Foot Reels



Make quickly in your own plant TITE-SEAL Cellophane Bags of any size that seal out dust, air, water and moisture-vapor. They protect military supplies from damage in transport or storage.

Acceptable for Methods I and IA, type III packaging . . . available in 3, 4, 6 and 8 inch widths under proper priority . . . 1000 feet to the reel. Saves stocking large quantities of special-sized bags. (Stock Bags also available in above widths.)



"All-Size" Containers and custom made bags can be furnished plain or printed in any widths or lengths desired on special orders of sufficient quantity.

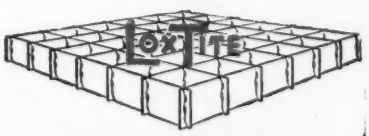
Heavy foil-lined laminated bags or tubes meet every requirement of Methods I, IA and II Military Packaging. LOXTITE Partitions give crash protection to fuses, rations, and delicate or fragile items.

Reasonably prompt shipment can be made on government orders bearing end use. A card will place our technicians at your command.

T. M. Reg. & Patent applied for

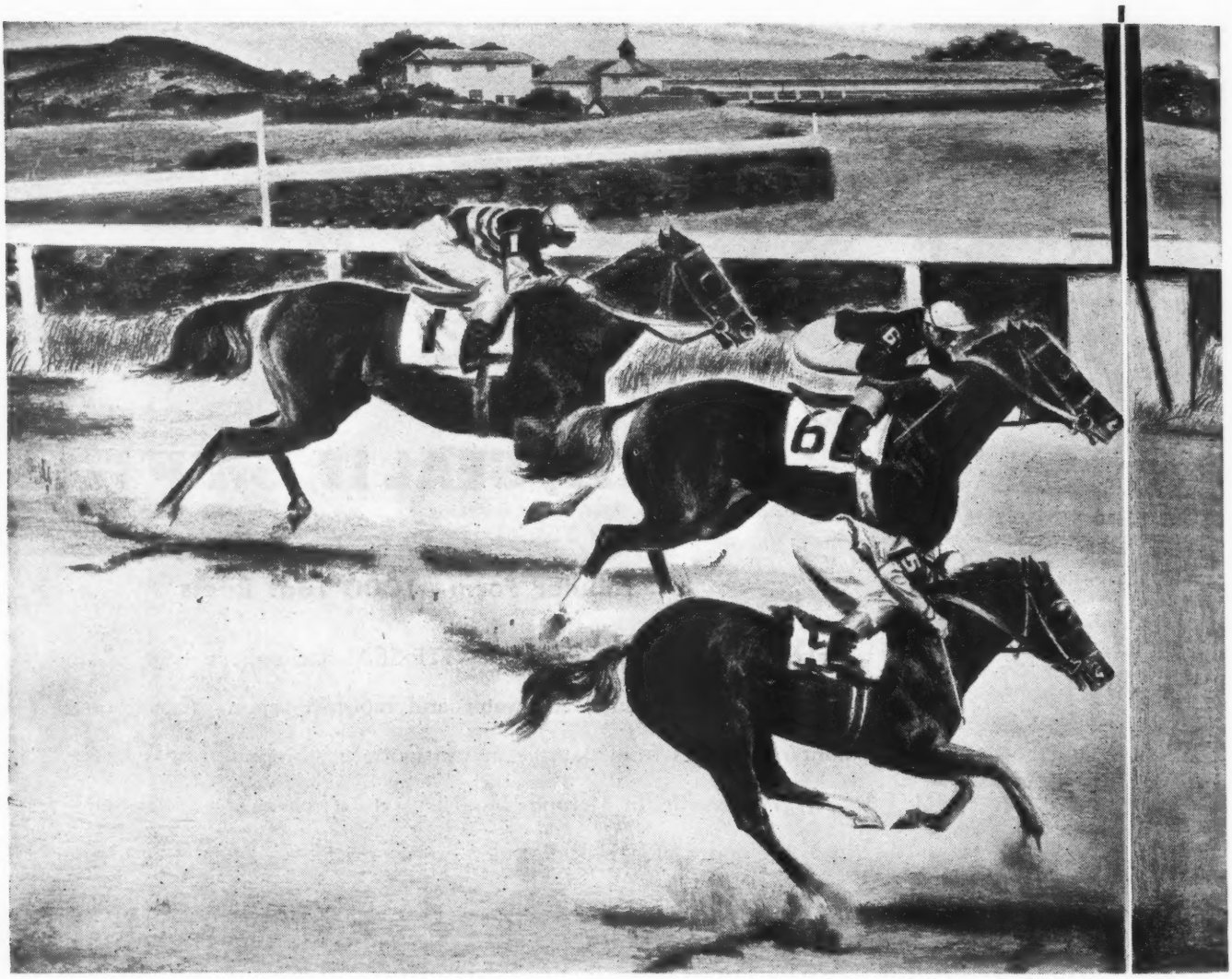
TRAVER CORPORATION

Dept. MP65 • 358-368 West Ontario Street • Chicago 10, Illinois



BOX PARTITION DIVISION
404 N. Sacramento Blvd., Chicago 12

WHAT IT MEANS TO "WIN BY A NOSE"



IN THE picture above, the winner actually nosed out the second horse by —take out your ruler—1/16 of an inch.

Is this good?

In horse racing, yes. But in the postwar race for business, it's something else again.

For, while everyone admits the competition will be tough, the sensible man maintains that it need not be *this* tough.

What's He Doing?

And so, he's planning *now* to be at least half a length ahead, if not more, during those first, hard-riding, postwar years.

He consults American Can Company about *his* future packages.

He realizes that the war itself has produced many new packaging ideas . . . that American Can Company has been in the forefront in solving many of these wartime packaging problems.

And You?

So, the postwar-conscious businessman is working with American Can Company . . . to get his products packaged better . . . more efficiently . . . more economically . . . and more interestingly.

This is how *he* intends to win in the postwar race. How *you* intend to win, too! American Can Company has had more than 43 years of experience in devising better methods of making containers.

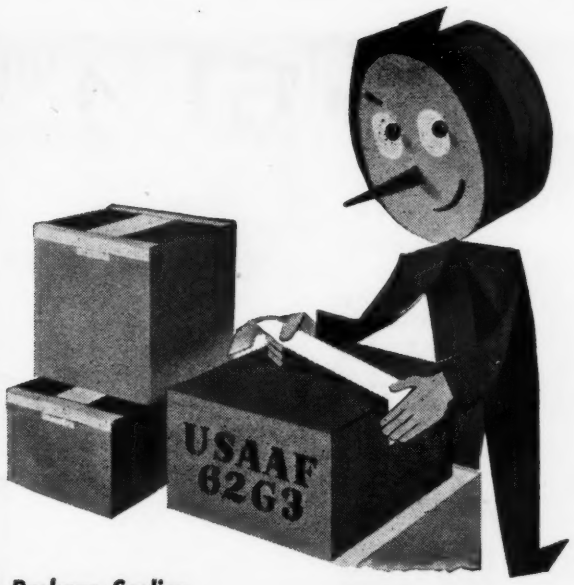
We have unparalleled research and marketing know-how. We'll be glad to talk and work with you—without charge.

AMERICAN CAN COMPANY

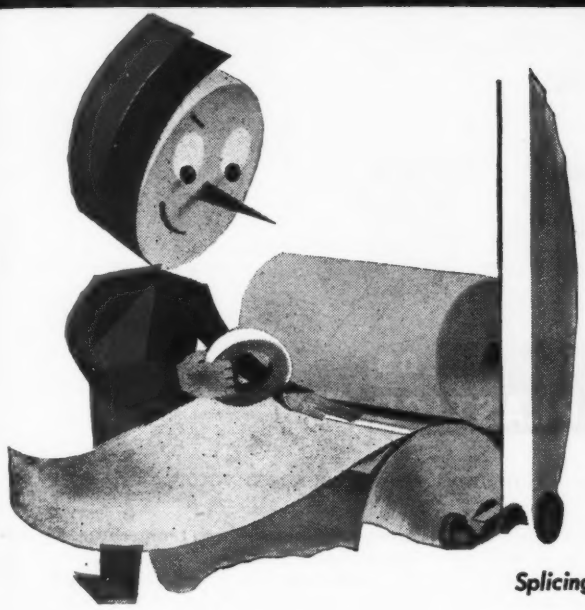
230 PARK AVENUE CANCO NEW YORK 17, N. Y.

WORLD'S LARGEST MANUFACTURERS OF FIBRE AND METAL CONTAINERS

Label Protection



Package Sealing



Splicing

Holding Job Tickets

Tape it on

QUICKER
SURER
CHEAPER

Tape saves time—cuts costs—in hundreds of industrial and commercial applications. And that's especially true of FILMONIZE tape.

FILMONIZE is the tape with no tangle, no "curl back," no waste—the tape that seals instantly, without water. FILMONIZE handles faster—stands up better—yet it costs no more.

Let your local distributor give you the whole FILMONIZE story. And see the complete line—Transparent Tapes, Colored and Multi-colored Tapes, Printed Tapes, Riveting Tapes, Identifying Tapes, Splicing Tapes, Acetate Fibre Tapes, Metal Tapes, Specialty Tapes, Packaging Tapes. All in widths of ½" to 18".

Filmonize
TRADE-MARK REG.

SELF-SEALING TAPES

INTERNATIONAL PLASTIC CORPORATION
MORRISTOWN • NEW JERSEY

AND THOSE FALLING UPON GOOD GROUND WILL GROW UP YIELDING FRUIT A HUNDRED FOLD

OLD LAMINATES IN NEW FORMS

Survey by expert John Delmonte, indicates the varied combinations and uses of laminates incorporating resin adhesives and such varied materials as metals, ceramics, textiles, glass, rubber, pulp and cork for both decorative and functional purposes. Laminates have grown up in the past few years and are now used by every industry from aircraft to furniture. Post-war possibilities are obviously great.

AS THE CROW FLIES

Gazing into his crystal ball, leading designer J. Gordon Lippincott envisages the post-war helicopter incorporating plastics and resins in myriad roles both exterior (paint, glazing) and interior (molded laminated fuselages, molded gaskets, knobs, fittings). Lippincott says plastics will reduce weight and costs, add to safety factor if used properly.

HOW MUCH PLASTICS?

Survey shows total post-war production potential of plastics and resins equals 790 million pounds, 413 million of which may be considered as structural or rigid plastics. This total production figure places plastics properly in relation to other materials when it is put alongside the 2 *billion* pounds of aluminum production potential and the 178 *billion* pounds of steel ingot production potential.

POST-WAR POSSIBILITIES

Some of the present and possible uses of plastics in new products are illustrated in the article "New Opportunities in Post-war Markets". These include a plastics thimble socket, stamp roller, flashlight circuit tester, multiple fuse, a new type of tooth brush, a potato slicer.

SAUCY BOSSY

What is the perfect cow? Most judges disagree so now they have a plastics model to go by. This miniature, 9½" from nose to tail, is a perfect reproduction of a wood model carved by a noted sculptor embodying all of the points of perfection in the ideal Guernsey. Molded in eight parts, Miss Perfection is used to judge living cattle in contests.

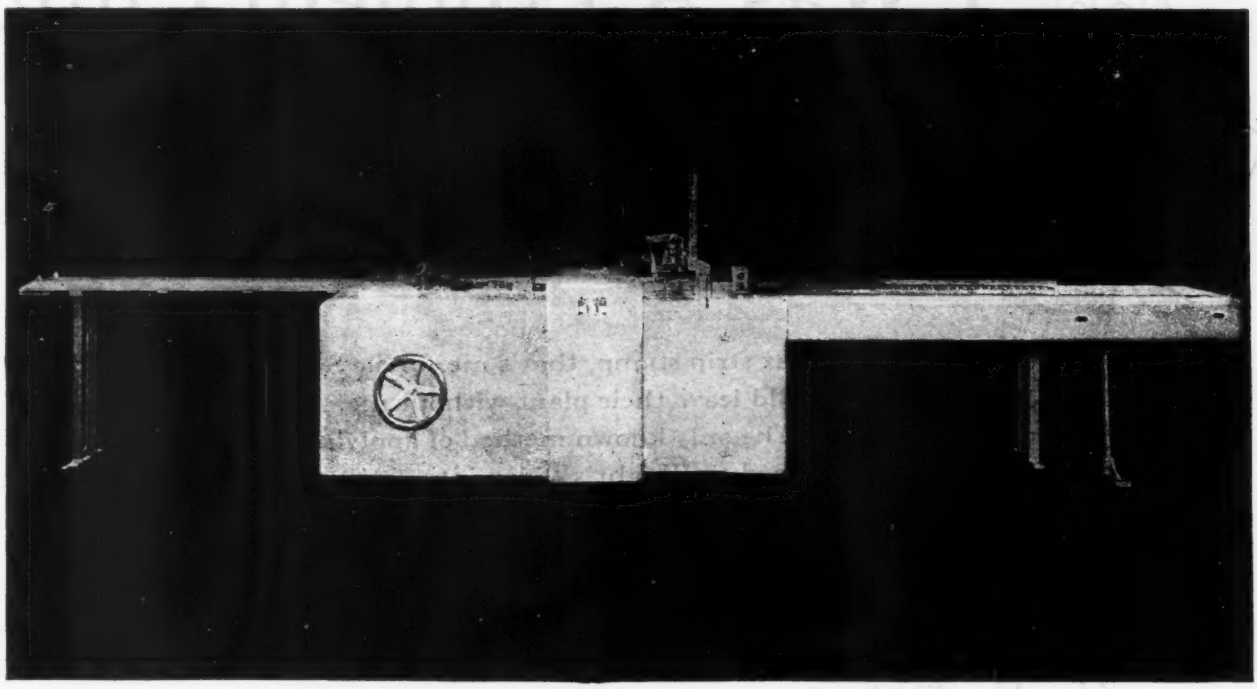
SILICONE RUBBERS

Another new rubber-like plastic is one form of silicones. So heat resisting, it is used as gaskets in high temperature operating turbo-superchargers where natural rubber failed; and as lens gaskets in powerful Navy searchlights powered with high-intensity electric Arc lights. The silicone rubber is also water repellent and has low compression set at high temperatures.

SEEDS

Beginning in October 1943 — and subsequently, at regular intervals, "SEEDS" has been published in advertising and marketing media as a form of plastics-wise information, gleaned from successive issues of Modern Plastics Magazine. This issue — No. 17 — concludes the present series. "Seeds" has won much favorable comment; has done much good! Outstanding companies in the plastics industry have expressed their satisfaction with the value of the campaign and Modern Plastics is happy to have been privileged to gather the facts and sow them wherever reception might bear fruit. The retirement of "Seeds" in no way interrupts your right to continue to call upon our Readers' Service for any plastics information. Modern Plastics staff will gladly give your inquiries prompt and personal attention.

modern m p plastics
The Meeting Place MAGAZINE of Plastic Minds
122 EAST 42nd STREET • NEW YORK 17, N. Y.



Today It's PRODUCTION Costs
Tomorrow It Will Be Production COSTS

Let a Jones Constant Motion Cartoner Increase Your Daily Volume While Reducing Your Unit Costs

YOU'LL always want full production. But in tomorrow's world, you'll have to consider carefully the question of production costs.

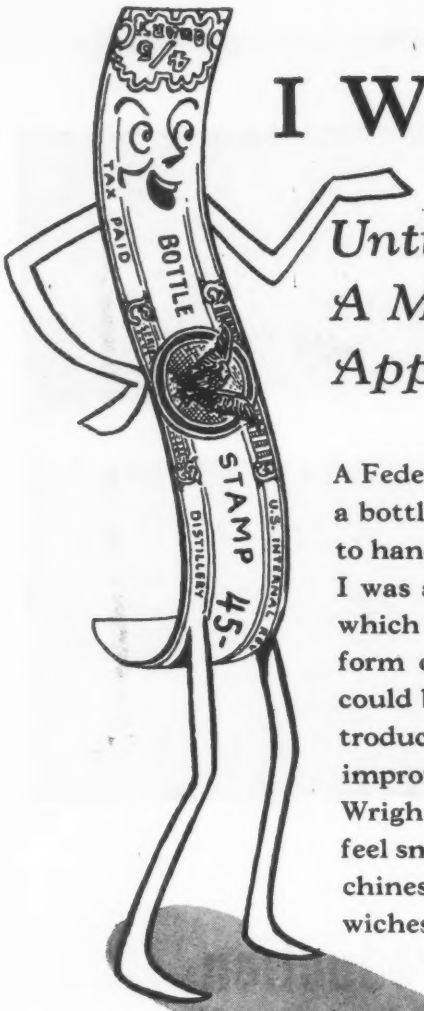
And in cartoning, production costs *are* lower with Jones Constant Motion Cartoners.

They bring you higher speeds with fully automatic operations. They are designed and built for simplicity—for long, trouble-free, continuous performance. Even in unskilled, untrained hands they are practically foolproof.

Many of America's largest producers of cartoned products have become repeat customers for Jones cartoners. For full information on what Jones cartoners are doing for these producers—and what Jones equipment will do for *you*—write us today.

R. A. JONES & COMPANY, INC.

P. O. BOX 485 • CINCINNATI 1, OHIO

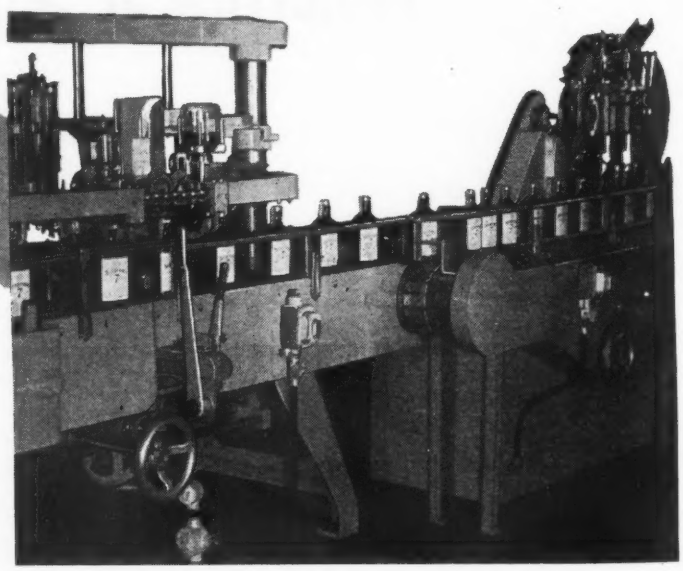


I Was A Problem Child

Until WRIGHT'S Developed A Machine To Automatically Apply Me To Bottles . . .

A Federal tax strip stamp, that's me. Uncle Sam told the distillers not a bottle could leave their plant without me. And boy, was I expensive to handle! The only known method of applying me was by hand. Then I was assigned to Wright's "idea into action staff". That's the outfit which since 1893 has been turning labor serving ideas into action in the form of automatic packaging machinery the trade hardly dreamed could be perfected. You've guessed the results. . . . In 1939 Wright's introduced a machine which applied me automatically. An even more improved machine will be marketed as soon as war production in the Wright plant permits. And I warn you other problem children. Don't feel smug just because you're not a strip stamp. Other new Wright machines package such diversified products as peanut butter cracker sandwiches, dehydrated foods, and potato chips. Keep an eye on Wright's.

Send your packaging problem children to



Wright's 1945 strip stamp machine (left). On extreme right is another new Wright machine you'll hear about later and which will profoundly influence packaging of such products as liquor, wines, drugs and perfumes.

Wright's Automatic Machinery Co.

Durham, North Carolina ☆ Cable Address: Yonwright

"Specialists Since 1893 In Turning Labor Serving Ideas Into Action"

G. P. BARRIER WRAP

(Grade A, Type II)

NOW AVAILABLE!

Production has been increased to make this possible. Previously, equipment could handle direct military requirements only.

G. P. BARRIER WRAP exceeds the most recent specifications for Grade A, Type II paper (JAN-P-121 and AN-P-12b). A rugged body stock supports a continuous heat-sealable film. Resistance to turpentine penetration more than double the highest standard — real insurance against any run-off or leakage of anti-corrosive compounds.

For packaging "To Go Around the World", Grade A paper is used next to machined or polished surfaces. Packaging Methods I, Ia, and II (ASF Manual 406) all have places for a wax-free Grade A, Type II material.

G. P. BARRIER WRAP *offers more in reliability! From manufacture of raw pulp to finished product, all operations are conducted under one roof with complete, continuous control over each step.*

Real personal help and samples of G. P. BARRIER WRAP are yours for the asking. Minimum order, 2,500 square yards in sheets or rolls. Shipments made direct from mill to producers of war materiel on priorities and contract numbers only. For prices and delivery, write or phone at our expense, outlining sizes and quantities needed.

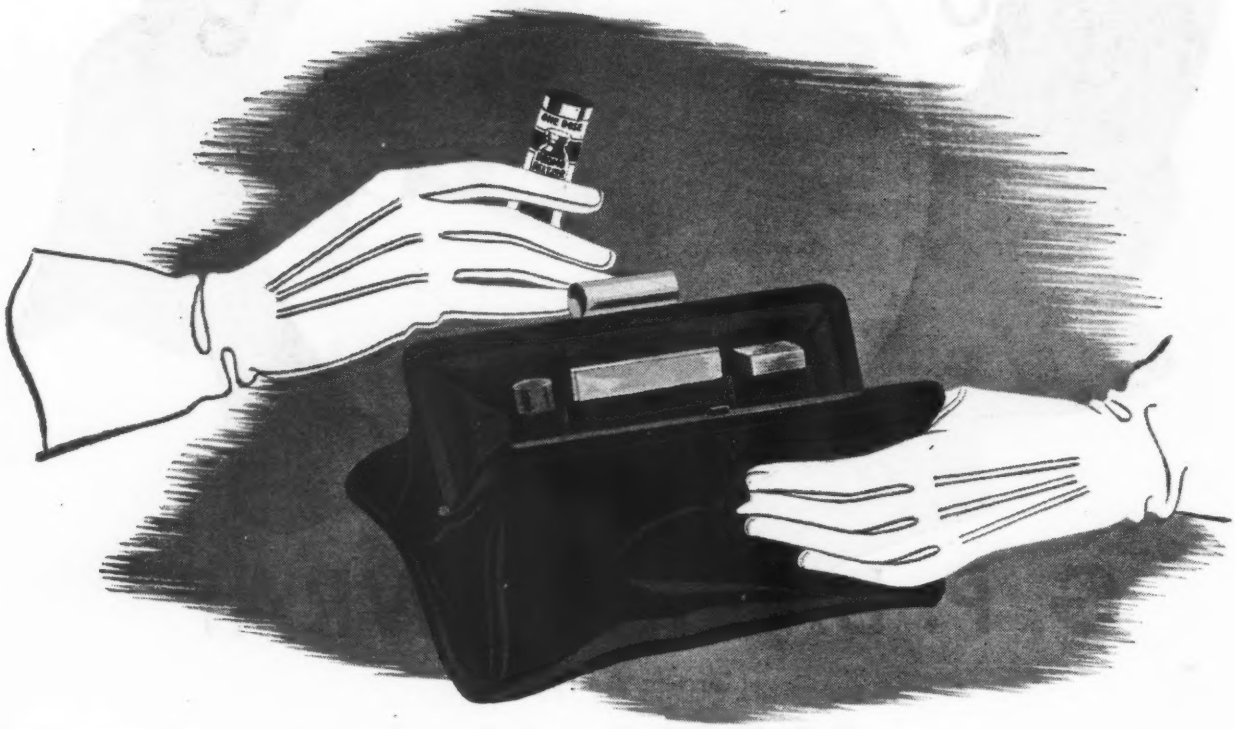
New grades are in the laboratory stage. Can we develop one especially for you?

GOULD FOR PAPER

REINHOLD-GOULD, Inc.

535 FIFTH AVENUE, NEW YORK 17, N. Y.

Look what cured an old Bromo-Seltzer headache



EMERSON DRUG used to have a headache that even their own good product couldn't cure.

They just weren't getting their share of the business from the handbag trade. By which we mean that women—and men, too—found the individual Bromo-Seltzer bottles too bulky to carry around for emergency use.

About then, we at Sun Tube had an idea. Why not package Bromo-Seltzer in our convenient, compact, airtight Unitainer, the one-dose collapsible tube?

We did. Emerson liked it and bought. Looks like women liked it, too. To date, they've bought over fifty million tubes!

Not that this is *your* headache

This may be closer to *your* packaging problem than you think. Because this story typifies the ingenuity and resourcefulness our packaging engineers can bring to your particular problem, either now or postwar.

You probably already know the advantages of the collapsible tube. That it's virtually unbreakable, that contents won't dry out even after the tube has once been opened. That it's germ-proof and light-proof. That it reduces loss due to leaks.

What you may *not* know, however, is that new developments like this one have made Sun Tube the ideal container for a host of products never before considered prospects for a collapsible tube.

If you would like some help on your own packaging problem, won't you give our nearest representative a call or send him a card today?

SUN TUBE CORPORATION

Hillside, New Jersey

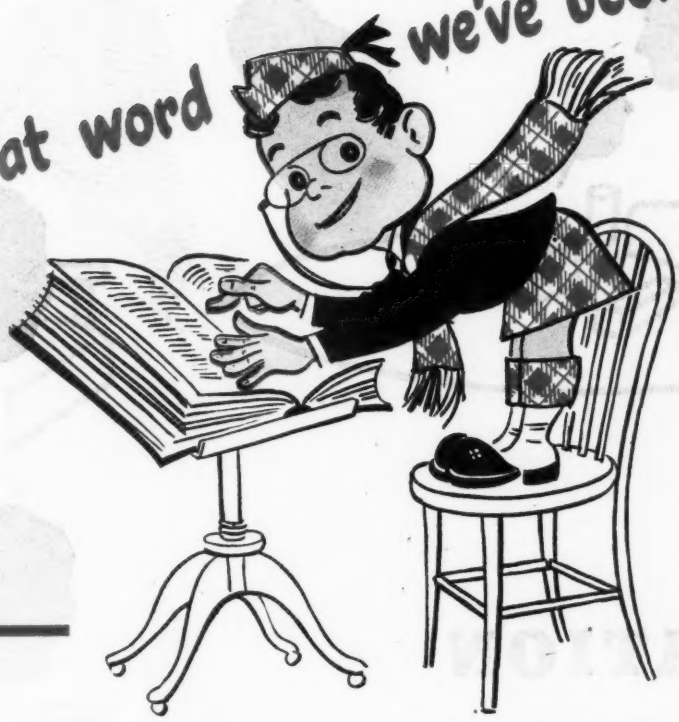
CHICAGO 1, ILL.
James L. Coffield, Jr.
360 No. Michigan Avenue

ST. LOUIS 1, MO.
M. P. Yates
Arcade Building

ST. PAUL 1, MINN.
Alexander Seymour
615 Pioneer Building

LOS ANGELES 27, CALIF.
R. G. F. Byington
1260 North Western Ave.

Here's that word we've been looking for!



It's "YES"! After saying "Sorry, no 'Scotch' Tape" for so long, we'd almost forgotten how to say anything else.

But we're learning the new word fast . . . and we're saying it oftener and oftener all the time.

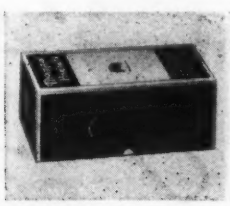
Because each day we're able to ship a little more "Scotch" Brand Tape to civilian users.

Of course, for a while yet there's not going to be nearly enough for everybody who needs it—but we're being mighty careful about seeing that everyone gets a fair share of the "Scotch" Tape available.

And likely it won't be too long before you'll be getting all the "Scotch" Brand Tape you can use . . . for all the sealing, holding and mending jobs it does so well!

Use "SCOTCH" TAPE *for these everyday jobs:*

HOLDING COMBINATION DEALS



SEALING SLIP-COVER BOXES

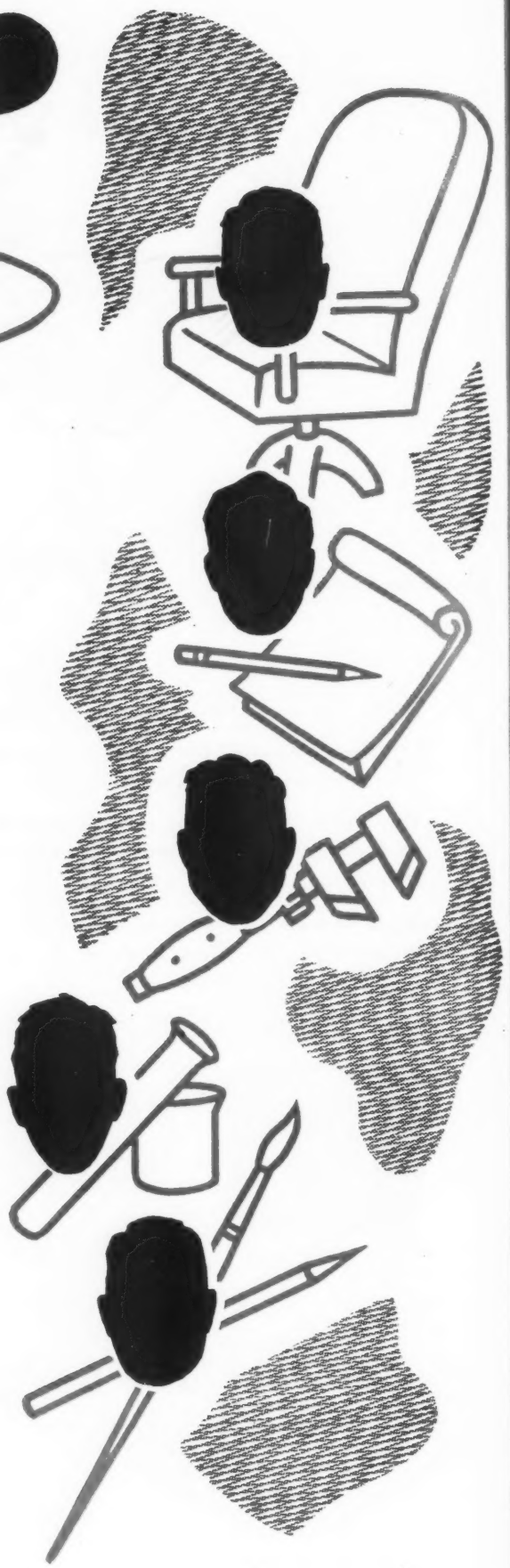
SEALING CAN COVERS

SCOTCH *Cellulose* **TAPE**
BRAND

Made in U. S. A. by MINNESOTA MINING & MFG. CO., *Saint Paul 6, Minn.*

"Scotch" is the trade-mark for the adhesive tapes made by M. M. & M. Co.

NASHUA WRAPPERS are a sum *total



ORGANIZATION

We are not too big to work together intimately. Nashua is big enough to maintain specialized planning and production departments in practically every field of packaging materials, and Nashua is small enough to interlock these departments into a compact organization with a free exchange of ideas and resources. Nashua management sees the packaging field, with its constant changes and developing trends, as a whole, and no department head wears blinders.

Nashua Wrappers are as modern as today and every day reflecting tomorrow's progress.

CREATORS · CHEMISTS · CRAFTSMEN

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NASHUA GUMMED AND COATED PAPER COMPANY

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* EXPERIENCE, EQUIPMENT
ORGANIZATION
VERSATILITY, RESEARCH
CONTROL

MODERN PACKAGING

June, 1945—a Special Supplement

Period One . . . the prospect for packaging

PAPER—Continued very tight; possible improvement late this year.

ALUMINUM FOIL—A bright spot; considerable tonnage soon in prospect.

METAL CONTAINERS—No reconversion problem; supply on the upgrade.

GLASS CONTAINERS—Heavy backlog, but adequate supply apparent.

CLOSURES—Materials situation good, except plastics somewhat tight.

PLASTICS, CHEMICALS, FILMS—Civilian supplies available as military cuts back.

WOOD—Military demands will continue high.

TEXTILE BAGS—Continued tight; manpower short, production facilities adequate.

MACHINERY—Situation excellent; civilian deliveries now being made.

As we convert to a one-front war, a glimmer of light appears in the gray skies that for so many months have overhung the packaging field. No one should expect a sudden burst of sunshine — there's too big a clean-up job ahead for the world, but we can confidently look forward to an improvement that will gather momentum.

Government men are guarded in their statements and opinions. They are reluctant to take any step that will in the slightest degree affect the military program, but apparently they have adopted a policy of cautious and gradual relaxation, so that as military needs sluff off, civilion "claimants" can move in to take an increasing share of packaging materials. Our prediction is that noticeable improvement will come sooner than Government will now admit.

Business, on the other hand, seems quite reconciled to a continuation of controls. While some feel that the absence of controls might produce a condition infinitely worse than regulation, there is at the same time a widespread eagerness to get going in the good old American way. Now we are in a transition period. Until supply and demand are closer to equilibrium, certain regulations should remain in force to insure equitable distribution of what packaging materials are available for civilian production.

Meanwhile, what will be the availability picture during the coming three or four months? Packagers, of course, are interested in specific materials and the situation with respect to any one material may change from day to day. What trends are discernible in the near future?

In an effort to answer those questions for the guidance of our readers, the editors of MODERN PACKAGING have made a special roundup of Washington opinion, together with a telegraphic survey of the many industries that serve the packaging field. What follows is a digest of the forecasts made by responsible sources in Government and industry, and the conclusions reached are considered reliable.

PAPER: One paper maker sees a noticeable improvement coming in the fourth quarter of 1945 and possibly a free market by the middle of 1946. In the next three or four months, says another, there will be some easing of the situation in the white paper field, which to a degree will make some packaging papers more plentiful.

A manufacturer of container board and cartons sees an increase in present production just as soon as labor and raw material become more plentiful. So far, cancellations and cutbacks have not made any appreciable dent in Government demands. If and when they come it is possible the slack will be taken up immediately by Lend-lease requirements and redeployment to the Pacific will call for containers.

Equipment changes, for most paper fabricators, will not be a reconversion problem and when the green light flashes they will be in a position to plunge right in on civilian packaging orders.

Paper in all forms — packaging types as well as for publications — will continue to perform an exceedingly important part for some time to come. Just how much packaging material will be needed for direct military operations is very difficult to estimate now and nobody knows what Lend-Lease will need.

The re-establishment of Spot Authorization not only permitted manufacture of many kinds of consumer items, but carried along with it the tacit privilege of obtaining containers and packaging materials — or at least the right to try and get them. Civilian production has its foot in the door. Pretty soon it will be entirely inside and running the show. Meanwhile, shrewd buymanship is in order.

METALS AND METAL PACKAGING: Aluminum holds the bright spot. This is one material for which prospects seem fairly good. In May, WPB "open-ended" CMP. Under the new procedure, it is now possible and advisable for package users to place orders without any CMP allotment symbols. Mills are now permitted to fill such orders after military and essential civilian demands have been met. Orders for non-essential civilian uses will enable the mills to keep up operations in slack periods and retain their manpower during periods of temporary military cutbacks.

Aluminum foil production, as estimated by one of the aluminum companies, amounts to approximately 5,000,000 lbs. per month for the entire industry. The end of the European war, the same source indicates, may release as much as half that quantity for civilian packaging. Before too long, says another producer, plenty of aluminum will be available for "essential and important civilian packaging."

Metal can makers are ready to go promptly into manufacture for civilian needs very soon after Government restrictions are lifted to permit the use of steel. As one can company executive points out, they have no particular conversion problem that cannot be solved readily by the time steel would be available from the mills. The steel mills, however — if the expressed viewpoint of one of them is typical — see little prospect in the near future for "any considerable additional quantity of metal containers for civilian requirements." So far, there has not been any appreciable reduction in military requirements for food cans, according to a can maker whose plant has been heavily loaded with war work. The amount of plate available for metal container manufacture is limited by the rolling capacity of the steel mills. Cutbacks in other types of steel will not affect metal container production.

The tin shortage — for which the only cure would be the re-capture of Singapore — means the continued use of substitute materials and lacquers for coatings to prevent corrosion. This makes an additional burden for lacquering facilities that

have been kept busy on military camouflage coatings. The fourth quarter, say the can manufacturers, will see an improvement in civilian can supply.

Cutbacks in the small arms program, say Government men, will reflect themselves in the copper supply, although it is too early to say what these will amount to. The Government owns about 20% of the existing plants and it is expected that half of this 20% will probably be retained as standbys. About 5% of the production is now allowable for civilian purposes. More will be available as cutbacks increase.

GLASS CONTAINERS AND CLOSURES: The glass manufacturers are entering what is normally their peak production period because of the seasonal demand for food and beverage containers. They aren't exactly soliciting any new business, as they have a sufficient backlog of orders on their books to keep busy for some months, regardless of the European war end.

This industry has been pinch-hitting for other types of packages, especially metal containers. Government men estimate that 76% of present production goes for direct essential uses. Nonessential uses, such as packaging for cosmetics, etc., couldn't be curtailed very much, they admit, without some effect on morale. The favorable military picture has made it unnecessary to tighten up controls.

For closure materials, supplies in most fields appear to be adequate, even though most plastics seem to be on the tight side. Natural rubber is still practically unobtainable, though synthetic is in good supply. Metal is obtainable, though one manufacturer points out that his industry is required to use a small percentage of reject steel sheets in the manufacture of metal screw caps and approximately 40% of reject sheets in the manufacture of crown beverage caps.

One glass and closure manufacturer whose diversified facilities put him in the munitions business early in the war, makes this comment: "We do know that ships' programs are being curtailed, that trainer planes are being practically eliminated and that Army plane schedules are being shortened. It remains to be seen the extent to which this may relieve material shortages in our field."

Crown caps suffered for a while from the cork shortage, but that is now a thing of the past. The supply is relatively plentiful now. About 20% of the cork imports (2,500 tons per month) goes for packaging purposes. None of it can be re-used, though attempts were made in that direction when imports were practically nil. The big problem with respect to cork is transportation facilities within the countries which supply us. Harvesting season begins in June, so the stockpile will be built up during the next few months.

PLASTICS, CHEMICALS, FILMS: Any reductions in military requirements will be very promptly reflected in making available for civilian use a great many materials not now permitted to be used for packaging, or at least usable only in restricted quantities. Cellulose acetate films and foils, for instance: "Every pound we make," says one manufacturer, "is presently being directly allocated by WPB for important war uses," and he adds that he is making more than ever before in his company's history. Principal applications are for pressure-sensitive tape and ordnance wraps. This calls for the lighter gauges. There is a good prospect that the heavier gauges of cellulose acetate sheeting, as well as increased quantities of molding materials, may become available for civilian packaging applications within the next few months.

In modern warfare, the chemical companies were among the very first to be pressed into service. One of these companies is very pessimistic about sufficient removal of government restrictions on its coating materials during the next few months to permit their filling civilian demands for packaging purposes. Another points out that the removal of control orders in many instances will have little or no effect on actual availability. For instance, WPB Order M-154 prohibited the use of nitrocellulose plastics for an extensive list of civilian items. This order

was recently revoked and civilian packagers are free to use the material if they can get it. Manufacturers of the material are booked to capacity for the balance of the year, so the market will not be flooded with nitrocellulose packages in a hurry, although future plans for its use can be made now.

Many other types of sheetings and coatings are tied in very definitely with military uses — koroseal, pliofilm, saran film, stripcoat, etc. During the early days of the intensified Japanese war, these materials will continue to do military duty exclusively, but the day is not far distant when packagers will be able to obtain them for non-military purposes. Planning is in order now.

The supply of cellophane available for civilian use depends on two principal factors, a leading manufacturer points out. Those factors are tonnage of essential materials allotted and the volume of business for war purposes.

Plastic molders and fabricators, like makers of metal cans, can go right ahead making plastic containers, with little or no problem of reconversion, just as soon as materials are available. One of the prominent plastic closure makers feels that the material situation will ease within 60 days. Many of the molders, however, still have a considerable amount of war work to perform, and may not be able, for some little time, to mold plastic containers to the extent they did prior to the war.

WOODEN PACKAGING: Demand for wooden packaging will probably increase, so don't look for any relaxation in L-232. Shipping conditions will permit shell eggs in crates to go overseas in place of powdered eggs. A big citrus crop on the West Coast will mean another heavy call for wood packages.

TEXTILE BAGS: Users of textile bags should plan on a far more extensive use of second-hand bags, as well as the most careful conservation practices, for the immediate future. Manpower is a critical problem in the textile field, although in actual bag making the production facilities are satisfactory.

MACHINERY AND EQUIPMENT: There is a very hopeful outlook in this field. Even according to conservative Army estimates, military cutbacks on machinery may be expected to run from 13% upward during the first three months or so following V-E day. Effective at the start of the third quarter, CMP has been "open-ended," which will permit the sale of controlled material without allotment after first filling all military and essential civilian orders, which will continue to carry allotment symbols. According to WPB records, there is a big backlog of unfilled orders at present and it is expected that there will be a sharp increase in the demand for civilian machines as packagers forge ahead on their plans for reconversion.

Manufacturers say that the improvement in this field had already been under way for some time, so that V-E Day did not give it much additional impetus. Since the revocation of L-232 last fall, they have been permitted to accept unrated orders provided there was no interference with military production.

Now, indications are that practically all makers of machinery have enough orders on their books to keep them busy for months — in some cases for as long as two years. "Customers should make early and definite commitments," advises one manufacturer who is not seeking orders now, "to protect their position six months or a year hence."

Deliveries are actually being made for civilian packaging, but most manufacturers say delivery dates will be three to six months hence on orders placed some time ago. Before delivery time can be shortened, the labor situation will have to improve, most of them agree.

Machinery manufacturers for the most part do not face discouraging reconversion problems in spite of the many changes in production operations occasioned by war work. If Government controls were lifted — and many see this not so far distant — they could start on the production of packaging machinery immediately. Some have even been fortunate enough to continue making their regular lines, only their customer has been Uncle Sam instead of industry.

MODERN PACKAGING

VOLUME 18 JUNE, 1945 NUMBER 10

A pledge . . . for supremacy in petroleum packaging

One of the country's leading marketers of petroleum products has taken a packaging pledge. It reads: "Just as Esso Marketers have perfected the products which have won for them leadership in the petroleum industry so do they now pledge to do everything possible to win and keep a position at the head of the field of petroleum package design."

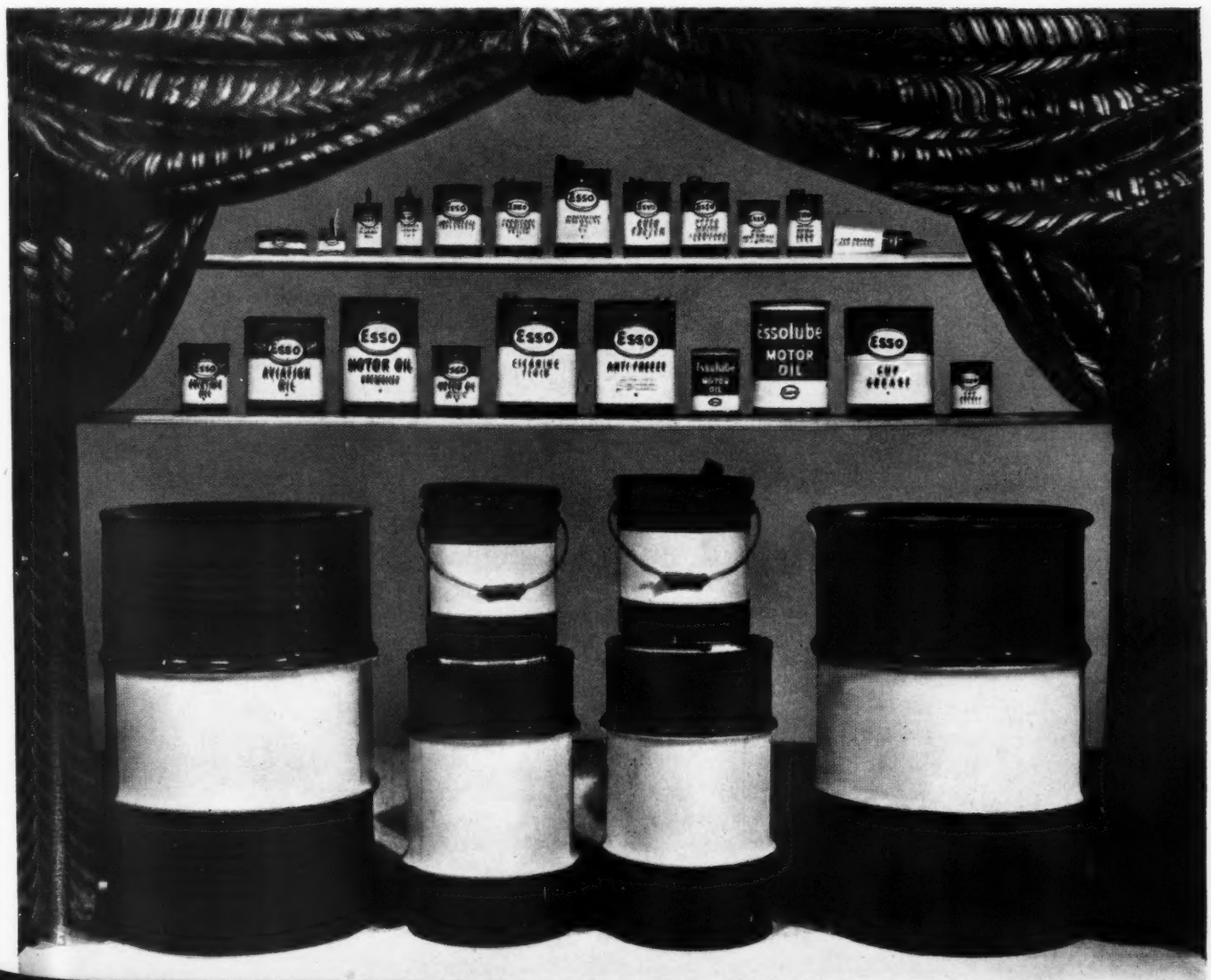
This pledge will be the foreword of the Esso packaging committee's booklet presenting an over-all packaging program to an employee group totaling 97,000. This comprehensive program is announced after a year and a half of intensive study of packaging problems for the group of companies affiliated with the Standard Oil Co. (New Jersey) which in a normal year use more than 100,000,000 containers and whose packaging operations amount to $20,000,000 annually.

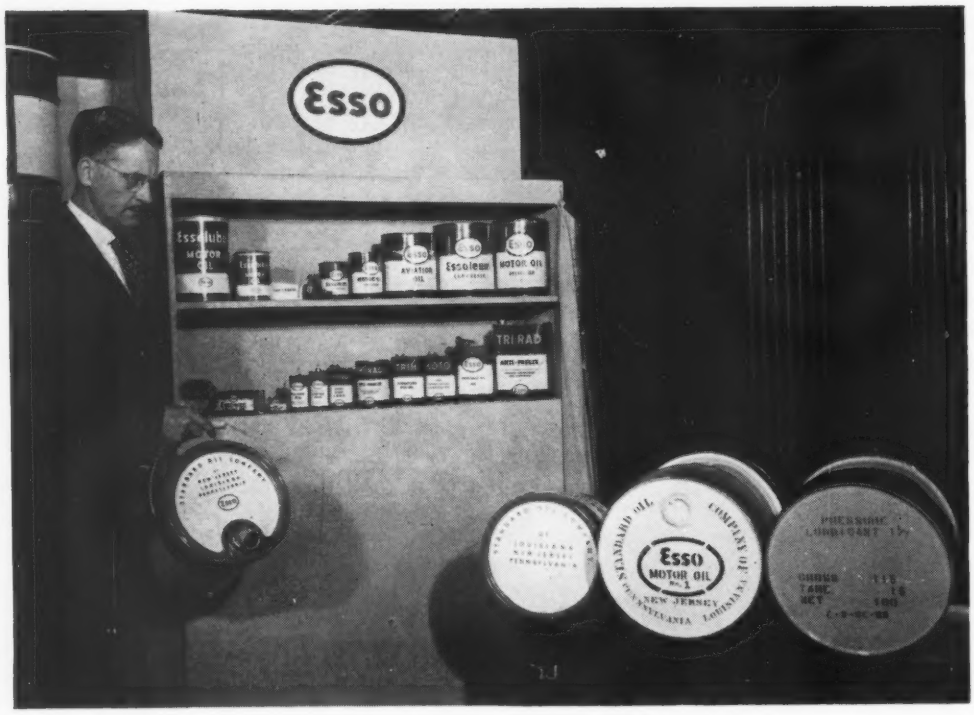
The way this project has been undertaken will be of wide interest to packagers in many other fields.

The part of the program that meets the eye is a whole family of packages, designed to make the Esso oval in red, white and blue synonymous with the Esso sign of "Happy Motoring." This involved a standardization of physical aspects of design, colors and brand identification for every type of product the company sells, covering all the oils and greases used in automotive, aviation, industrial and agricultural fields, plus a long list of household products, such as floor dressing, furniture polish, paraffin wax, spot remover and others.

Economic factors of the project are even more far-reaching. They are concerned with a standardization program to

A whole family of redesigned packages to make the Esso oval synonymous with the Esso sign of "happy motoring."





A. D. Murphy, head of Esso's packaging advisory committee, holds 5-gal. pail that can be used for either liquids or greases by merely changing lid. This is example of steps taken to reduce container inventories. On top shelf are new Esso packages. Old ones below. Drum head in center illustrates standardization of stenciling for specialties.

reduce to a minimum the number of sizes and shapes of packages used and to make for greater flexibility in packaging operations throughout the company's eight packaging plants serving eighteen states where petroleum products are marketed under the Esso name.

Such uniformity in packaging procedure will (1) provide greater flexibility in shipping and filling operations in the packaging plants, (2) help to reduce warehouse inventory, (3) reduce the amount of money tied up in inventories of containers and package supplies, (4) enable the handling of spot orders more quickly.

Esso's vast packaging program has been undertaken to prepare the company for the expected resumption of aggressive postwar merchandising in the petroleum field. The need for the program was recognized about two years ago when top management organized a company-wide packaging advisory committee to coordinate all of the packaging activities.

Until that time, Esso had no integrated packaging program. Usually matters of design were left to the advertising or sales promotion department. Decisions were often made with careful attention to merchandising aspects, but often no consideration was given to the facility for handling the packages selected from the standpoint of economy of purchasing or production. Likewise, containers were often purchased for the ease of handling on production lines, without proper attention to consumer demand for the most convenient or attractive sales units.

Things sometimes happened like this: A member of one of the manufacturing divisions would have an idea for a new product. He could show a certain potential market for it. He would go to the sales department. The sales department would go to the advertising department for a package and promotion program. Some novelty container that looked like an Aladdin's lamp might be forthcoming for a polishing wax, utterly impractical for mass production or shipping. Under the new packaging set-up such mistakes cannot happen.

Esso's experience has been very much like what has happened in many large and well-established companies, where packaging activities have grown within the various company divisions and the need for coordination is apparent only when overlapping or confusion of activities occur.

When brought to the attention of top management, the economies and merchandising advantages of a coordinated packaging program were so striking that a go-ahead signal for the establishment of Standard Oil's packaging advisory committee was quickly granted.

Appointed to head up this committee was A. D. Murphy because of his work as coordinator of packaging operations for Esso's Delaware company and its affiliates. As superintendent of the packaging division of the Bayonne Works, Mr. Murphy was also selected by the Government to be responsible for packaging the gasoline used in the African invasion.

Mr. Murphy's committee represents each of the company's major activities in the production, distribution and sale of petroleum products. It includes members from the advertising and sales promotion branches, sales departments, purchasing departments, manufacturing department, foreign marketing and refinery divisions and legal departments. In this way every phase of package planning is covered from the selection of containers to give the best protection and performance to the design, merchandising and legal factors involved in every step.

First activity of the committee was to determine which of the something more than 180 types and sizes of package units could be eliminated. In this standardization program, for instance, it was found that six standard-size containers for liquids could do the job that had previously been done by 24. Six standard types and sizes of grease containers are now doing the job that 14 did before.

This means a large saving in warehouse inventory and space because it eliminates many of the specialized types of containers formerly carried in stock for very small specialty orders, sometimes as few as one or two units packed for a single sale. An indication of how the program permits interchangeability of some of the packages is illustrated by the 5-gal. pail. Simply by changing the lid the same container may be used either for greases or liquids. For liquids a lug-type lid with collapsible pouring spout, similar to the construction of a collapsible drinking cup, is used. For greases, a lid

without the pouring spout serves the purpose. Identification is stamped on the bodies by hand, so that the container, itself, enameled only in identifying red and white, is interchangeable for any product adaptable to such a pail.

Containers for motor oil now include the following sizes: 1-qt., 5-qt., 1-gal., 5-gal. pail, 15-gal. drum, 55-gal. drum. If sales volume is sufficient to warrant, 2-gal. cans may be included.

Before any eliminations of container sizes or types were made, salesmen were consulted for their ideas on consumer preferences. For example, the company formerly used a 5-lb. grease container. Salesmen said there was not much call for this quantity. If a customer wanted more than one pound, he could take five singles, or the salesmen would point out to him the economy of the 10-lb. size.

Hand-in-hand with the size standardization was the design program to bring the whole Esso package group into the Esso family. About twelve years ago, William O'Neil designed the familiar Esso Oval in red, white and blue as the Esso package motif to conform with the Esso service stations' use of red, white and blue. This year, Mr. O'Neil was called in again by Esso to arrange this simple striking Esso symbol in relatively the same position on all the company s lithographed containers. Backgrounds are red and white with lettering in blue on the larger packages and with certain variations of red and blue lettering on some of the smaller ones. Careful attention was given to the positioning of the design to achieve uniformity throughout the line. The same familiar symbol is as recognizable on a 2-oz. can of Esso handy oil as on the service station sign.

The company has deviated from the red, white and blue color scheme only for wholesale accounts and some jobbers. In these cases a chocolate and chamois color scheme has been used with chocolate lettering to distinguish such products from those marketed under the Esso name.

Another interesting variation is the treatment of the Essolube motor oil package. Esso motor oil sells for 35 cents. Essolube sells for 25 cents. On the 25-cent brand, the third color, blue, has been omitted. This is not only done to distinguish it from the Esso motor oil package but, because it is a less expensive brand, the cost factor of the packaging is involved. By using only two colors on the Essolube package, the company saves $35,000 in its printing bill a year.

It is uneconomic, the committee believes, to use lithographed containers when production runs on a particular product are less than 10,000 units. For such runs and for special orders, the company has containers enameled in red and white with blank ends. By means of special hand printing set-ups the blank ends are identified for brand and product. Since these are big drums, usually standing endwise, the drum head is the most prominent place for brand and product name. Another type of hand printing press was designed by one of the men in the Baltimore plant for printing around the containers (see illustrations). This method is used as an economical means for the small specialty items of one or two units. For larger orders, the company has provided stencil methods of identifying drum heads. Complete specifications for this printing are supplied to each plant, complete with what is known as the Esso alphabet, another O'Neil achievement, so that all printing is in the same lettering. Specifications are also provided for the colors of all enamels and printing inks used so that no matter in which plant the product is packaged, colors and printing are uniform.

First of the redesigned packages were presented to what Esso calls its "world wide" organization last November. This includes representatives from all domestic and foreign divisions of the company. The committee says it was the first time in the history of the company that top management listened to a packaging story as the feature part of such a meeting.

The packaging program is also being presented to the sales forces at regional meetings in the various geographic sales areas. The complete display beside competitive packages, the company says, has been a great morale builder for the salesmen who haven't seen many new packages since the beginning of the war.

Another comprehensive activity of the packaging committee has been the preparation of a packaging manual which is distributed to all divisions. The manual is a loose-leaf notebook in which new and revised sheets may be inserted or added whenever issued. The manual contains complete specifications for all types of containers used—steel barrels,

Packaging program includes efficiency studies in production technique. Example of time-and-money saving is this redesigned conveyor system in company's New Jersey plant. Drums were formerly turned over eight times in packaging operation. Now they are moved through upright without any turnings.

drums, cans, cartons, small packages. It gives complete directions for the handling of new and re-used containers with the idea that the best planned package won't do much good in gaining a sale if it has been mishandled before it gets to its destination. There are included complete specifications for the stencil lacquers, spray branding equipment, drum enamels, equipment standards, reclaiming drums, preparing steel drums and barrels for storing, filling and shipping. Already the manual includes nearly 80 pages. Eventually it will contain more data relating to principles of conveyor layouts, container testing methods and equipment handling.

Production technique in plants is also being studied and in many cases obsolete equipment will be replaced. A million dollar budget has been provided for improvements during the coming year alone. An example is the re-designed conveyor system in one of the New Jersey plants. In this operation, drums formerly were turned over eight times during the filling, closing and labeling operation. Now the drums move in an upright position through all these operations without any turnings. The improvement not only saves time and money but has speeded up production.

Studies are also being made to determine the feasibility of packaging plants nearer to distribution centers and shipping the products in bulk to those points. Establishment of such plants will be considered, however, only if the savings in freight costs are sufficient to offset cost of packaging facilities. For instance, in the case of a plant set up to produce 450 quart packages a minute, it might be more feasible to package in that location than to ship in bulk to other points if it meant that the high-speed plant would be idle part of the time.

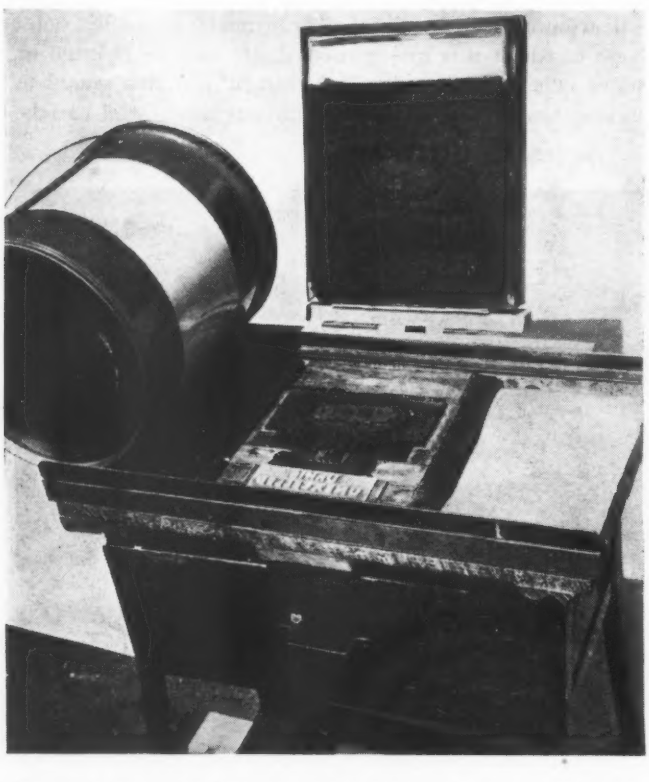
Esso packages for foreign markets are to be the same as those for domestic sale, all printed in English. The company expects to continue the use of metal containers for liquids and greases and has never gone into paper or other substitutes for the war period. They are studying the possibilities of a transparent plastic container for motor oils, however, in anticipation of the time when such containers may compete favorably with metal in price and performance.

Behind the whole program is a clear-cut line of thinking to promote through the simplest and most efficient packaging methods an association of Esso with what the company believes is the best in petroleum products. The products, themselves, do not have the eye appeal of cosmetics or foods, therefore the most straightforward trademark will identify quickly in the public mind the products with the company name.

In the future this identification will be even more important. An Esso package can bring the name Esso not only to the gasoline service station, but into industrial plants, onto the farms, to the airports, into the homes. The company makes many household products as previously mentioned. Eventually they hope to have an Esso household kit in every home including spot remover, furniture polish, floor dressing, a product to take the squeak out of creaky boards, one to use as a "door ease" and others.

In such a program, the main objectives as stated in the company's presentation to employees are:

1. To present at the point of sale, Esso's products in a way planned to best represent the company and the product.
2. To design packages that provide the products with advantages equal to, or superior to, those enjoyed by competition.
3. To make the best packages with which to perform their primary function of protecting, preserving and transporting the merchandise.
4. To bring about operating economics and increased efficiency through uniform packaging standards within all of the marketing companies and divisions.



Special two-color hand printing set-up designed in Baltimore plant is used for small runs and special orders.

Type used is made in fonts known as "Esso Alphabet" so that same uniform lettering will appear on all packages.

Here are several good examples of silk-screen printed decoration on plastic containers used for lipsticks, face powder and rouge. Special inks are used which will adhere firmly to the plastic surface and will not rub or crack off.

Printing on plastics . . . factors to consider

*by John Simonds**

In recent years the increased use of plastics for packaging has resulted in a corresponding increase in the demand for production methods which can be used to produce lettering and designs on plastic surfaces.

Painting, hot stamping, engraving or decalcomanias have been used successfully in various applications but, in general, these methods are costly because of the time and labor involved in quantity production and many of the newer plastics are not suited for these methods of marking. Whenever sufficient volume of production is involved, however, it is often practical to produce continuous printing on plastic sheets or fabricated parts, and once such a printing operation is set up, production is rapid and the results are frequently much better. Printing methods are varied enough and of sufficient range to be adaptable to almost any surface commonly encountered in the various plastic materials which are used in packaging.

Printing on plastics may be accomplished by any of the three principal printing processes—letterpress, lithography or gravure—depending upon the type of surface, the service requirements of the printed piece and other mechanical factors, such as whether the parts are of tubular, sheet, extruded or molded form. The packager should always consult with his printer before selecting the method to be used on any given application. The printer, in turn, should check with his ink supplier for the proper ink to be used on each job.

Generally speaking, the problem of applying an ink film to a plastic surface is barely out of the laboratory stage and the solution of individual problems for packagers and fabricators constitutes a custom operation on the part of the ink maker. One job may require more than one type of ink or more than one printing method to obtain the best results.

The most important factors governing the application of printing inks to molded, sheet or extruded plastics are the physical characteristics of the plastic surface and its me-

* International Printing Ink Division, Interchemical Corp.

In laboratory of ink manufacturer, draw-down test determines flow characteristics and color match of special compound for printing on plastic. Mixing is done on marble.

Milling inks on laboratory roll mill. Production is usually in small quantities and is done on machines similar to and not much larger than the one shown in illustration.

chanical or chemical resistance to an ink film. The physical condition of the plastic surface, such as smoothness resulting from polishing or buffing or use of a film of wax for protection, governs the adhesion of the ink film. If the ink does not penetrate sufficiently, a lack of adhesion results. Other factors must be considered as well. If a lubricant such as zinc stearate is used, the parts may require washing in lukewarm water before printing.

Special types of inks sometimes necessitate other types of surface treatment to insure proper anchorage of the ink. Mechanical resistance of an ink film to its anchorage may also be caused by climatic conditions, bending, or flexing movements which cause peeling. Adhesion can be affected by the ink's permeability by air, carbon dioxide, water vapors and solvents.

Depending on the use of the finished product, inks must comply with specifications which may include resistance to gasoline, motor oils, alcohols, acids, alkalies, soaps, foods and various chemicals and gases. It is important that all conditions of use be stated by the packager or fabricator so that the proper ink will be supplied.

The type of printing equipment actually available should be stated. Only too often does a manufacturer make products on which specific requirements must be met and then find that he does not have the equipment to do the job.

A brief outline of the printing methods most commonly used will help to give a picture of the ramifications of printing on plastics and the different types of inks which may be used.

Typographic or letterpress printing. In typographic printing the ink is transferred from inked rollers to a raised printing surface and then is imprinted upon the surface of the plastic. Because of the time lapse involved in transferring the ink from the fountain to the printed surface, such inks must not evaporate rapidly. They are usually formulated with oxidizing materials which solidify by the absorption of oxygen from the air. These inks are used mostly where drying time is not an important factor or where slipsheeting is possible. They consist of insoluble, inorganic and organic pigments ground in bodied drying oils, oleoresinous vehicles and synthetic resins such as alkyds, ureas, phenols, vinyls, etc. Formulas are adjusted to meet specific requirements for drying, binding, gloss, and other properties.

Aniline printing. This method is similar to letterpress but utilizes relatively inexpensive rubber printing plates and quick-drying inks. Oxidizing vehicles are eliminated; inks are made from various resins dissolved in synthetic solvents.

Lithographic or offset printing. In lithography the ink is transferred to the planographic printing surface by a series of rollers and the same drying limitations apply as in typographic inks. Lithographic inks have heavier consistency, higher pigment concentration and narrower range in choice of vehicles.

Silk-screen printing. The silk-screen method is widely used in printing plastics because of its adaptability to curved or non-uniform surfaces. In operation, a silk screen which has been treated to produce the lettering or design desired is placed on the surface to be printed and a rubber squeegee drawn over the silk to force ink through the pores and onto the area to be printed. Although the commonly used name for this method of printing is "silk screen," the screen may actually be made of a variety of fabrics or even finely woven wire mesh, depending on the application. Inks for silk screen

work are divided into oil, water color and synthetic types. Of the three, the synthetic type is best suited to printing on most plastics. Basically, a silk screen ink must be formulated so that it will not dry quickly at room temperature nor form a hardened film on the silk screen. In order to meet requirements for quick drying and where the type of plastic to be printed is known it is possible to formulate inks of either a viscous or liquid type which can be force-dried by application of heat. This heat is frequently applied by infra-red lamps. High temperature accelerated drying of this nature is impractical on thermoplastic materials.

Silk-screen printing with plastic-base inks is also finding many new applications for decorating and printing on glass. A recent use was on a new line of perfumes which were packaged in glass bottles. The name of the maker, the name of the perfume and a decorative design were printed with the use of a specially prepared silk screen which resisted the solvents which must be employed in the inks. The inks themselves were designed to resist the action of alcohol and other ingredients of the perfume. They are dried rapidly by application of radiant heat, which polymerizes the film and forms a tough, scratch-resistant firmly-adhered coating.

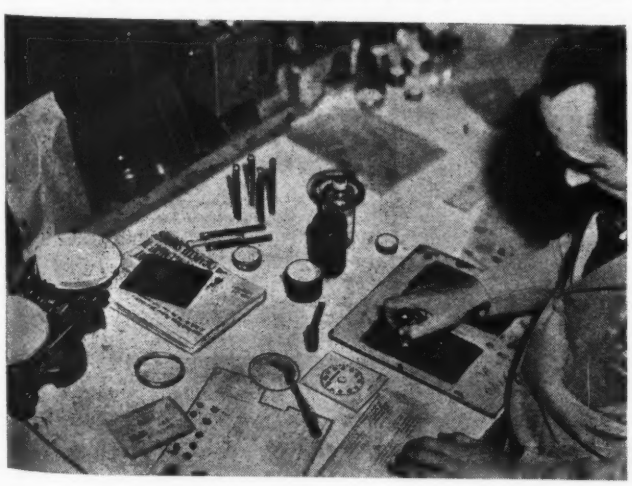
As we have indicated, each printing application represents an individual problem of correct ink and printing method, but mention should be made of typical conditions and how they are met. On tubes or extruded shapes where production is continuous, a liquid or semi-liquid ink which dries rapidly should be used to avoid offsetting. When the surface to be printed is a thermoplastic, the ink must be formulated in such a manner that after imprinting it forms a bond with the thermoplastic. In all cases of this nature, the ink should be made of the same basic ingredients as the plastic material.

Another type of ink is applied in conjunction with a solvent which carries the ink film into the plastic surface to obtain proper adhesion. The solvent is subsequently removed. This method is capable of printing two and three colors.

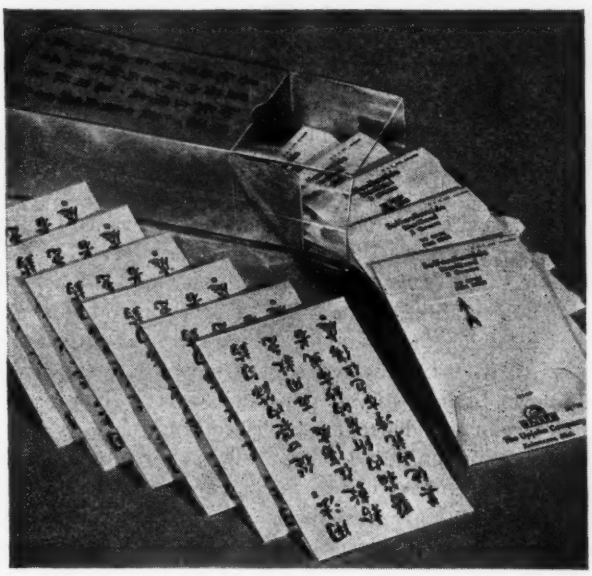
In summing up, the five points to consider are:

1. Type of plastic (thermosetting or thermoplastic)
2. Form of plastic (sheet, rod, tube, extrusion, molded part, laminate)
3. Method of application (letterpress, aniline, silk screen, lithography)
4. Type of ink (plastic base, quick-drying, oxidizing, heat-set)
5. Method of drying (oxidation, slipsheet, moisture vapor, infra-red)

Test printings of sample formulations on various types of film and sheet to determine penetration, rub-resistance.



Including the Chinese



This is the way sulfanilamide looks to the Chinese. Translated, the Chinese characters describe how to use the package as follows:

"Use from the enclosed packer. Put powder on the wound. Then from first-aid kit, take gauze or other clean cloth and wrap wound."

This package, developed by The Upjohn Co., was prepared for army medical use overseas. It is designed for holding and dispensing sulfanilamide, to protect the crystalline powder from moisture and mustard gas and also to provide a means of spreading the drug on a wound in a thin, uniform film.

Protection starts with a 100% rag bond inner envelope sealed with a white, heat sterilizable adhesive. The envelope is constructed with a double top flap. The inner member of this flap combination is perforated so that several small streams of crystals may flow on to the wound. To prevent sifting an outer flap is sealed over the perforations by means of spot gluing. Such sealing makes it easy to tear the outer flap loose.

An outer envelope also facilitates handling. The bottom flap is tightly sealed to prevent contamination while a special safety fold flap is used as the top opening.

The envelopes are placed in a carrying packer of chipboard which is then placed in a heat-sealed moisture-vaporproof envelope.

Chinese copy was supplied by the St. Louis Army Medical Depot, and has been reproduced by means of line cuts on the carrying packer and the outer envelope. The inner envelope carried instructions in English.

These individual units are placed in corrugated boxes and then into wooden boxes for shipment.

CREDITS: *Inner and outer envelopes, Neostyle, Inc., Chicago, and U. S. Envelope Co., Springfield, Mass. Carrying packer, Grand Rapids Paper Box Co., Grand Rapids, Mich. Cellophane envelope, Munson Bag Co., Cleveland, Ohio. Corrugated boxes, American Box Board Co., Grand Rapids, Mich. Wooden boxes, New England Box Co., Greenfield, Mass.*

Descriptive labeling . . . *the positive approach*

*by J. F. Carroll**

Rationing has taught Mrs. Homemaker the need for getting the best values for her precious ration points. The same type of thinking was true during the last depression, but then Mrs. Homemaker was short on money and had to be sure that she got the best values for her money.

The demands of consumers for information on labels are getting more audible all the time. They want to know what they are buying in order to be sure they get satisfactory values. It isn't a case where women have lost confidence in well-known brands, for all impartial surveys show a very high degree of confidence in established brands.

The real problem arises with the less-known or unknown brands. Women have not been acquainted with the qualities that go with the unknown labels. The problem has become more acute during the war because many well-known food brands are going to the fighting fronts in such volume that homemakers cannot always find them on their grocer's shelves and, therefore, may face a choice between several unknown brands.

The positive answer to this consumer demand for sufficient information to permit her to buy intelligently is good descriptive labeling. By good descriptive labeling, we mean labels that tell the purchaser about each important measurable quality of the product and describe these qualities in uniform, easily understood terms.

Let's analyze this definition of good descriptive labeling. Unless every good manufacturer uses descriptive terms which are easily understood, he has not helped to sell his own product and he may add confusion. Unless the same descriptive term is used by all food manufacturers when applied to a given food item, we have only added to the confusion.

But uniform terminology can only be used where industry has been able to establish specifications and that takes us back to the first part of our definition which refers to "measurable qualities." If a quality cannot be scientifically measured, it should be left off the can or package until science develops such a measure. For example, no way has been devised for measuring the flavor, aroma or body of coffee and, therefore, Mrs. Homemaker depends on the brand name as her buying guide.

Industry must assume three responsibilities. First, it must find out what qualities Mrs. Homemaker considers important when she is buying a given product. Second, it must find ways of measuring scientifically as many of those qualities as possible. Third, on measurable qualities, industry must find what terms will best describe these qualities to consumers and then it must put these descriptions on its labels.

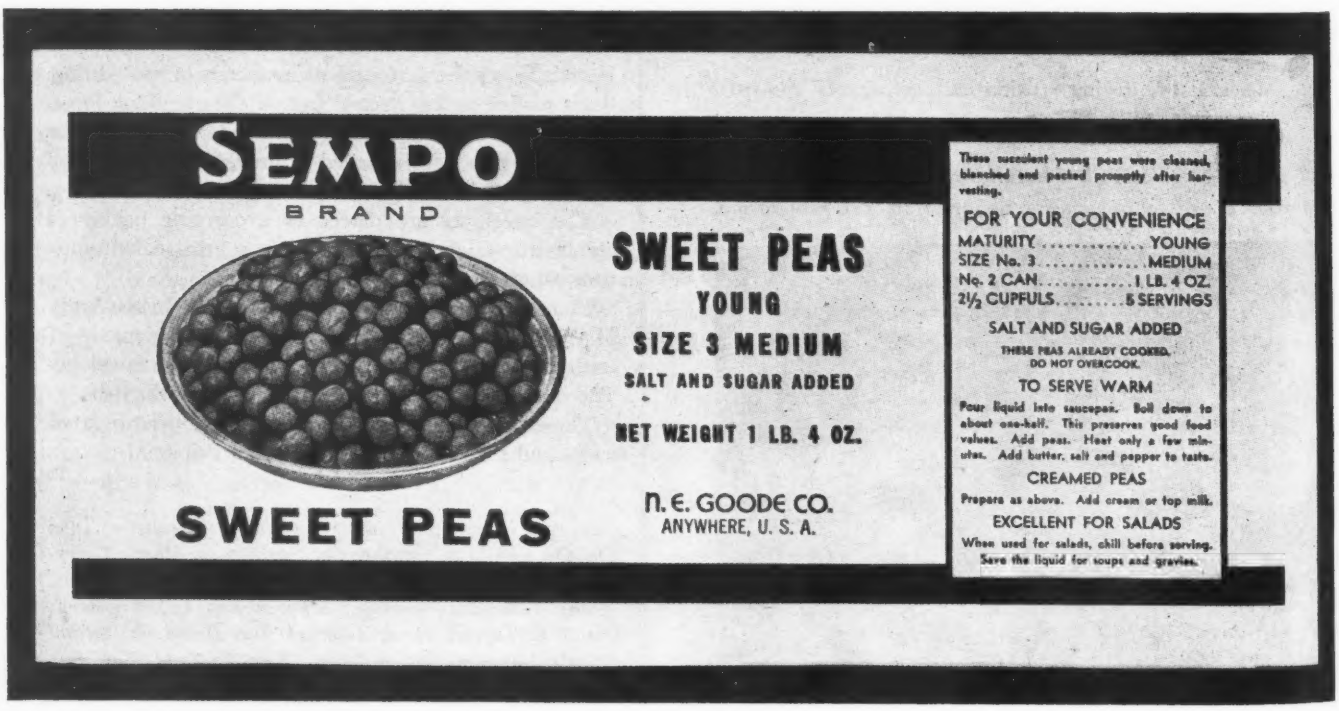
It should be recognized that much progress has already been made in developing better labels for consumers. Part of this progress has been made in individual companies trying to give consumers the best possible information. Part of the progress has been made through the Food, Drug and Cosmetic Act, for which the Grocery Mfgrs. of America was one of the leading proponents. Many consumers do not recognize that they are assured good wholesome food by this law.

According to law, every label must carry this information:

1. Name of product.
2. Name and address of manufacturer, packer or distributor.

* Grocery Mfgrs. of America, New York, N. Y.

Dummy label produced by GMA to show the type of information recommended for an adequate descriptive label.


SEMPO
BRAND
SWEET PEAS
YOUNG
SIZE 3 MEDIUM
SALT AND SUGAR ADDED
NET WEIGHT 1 LB. 4 OZ.
SWEET PEAS
N. E. GOODE CO.
ANYWHERE, U. S. A.
These succulent young peas were cleaned, blanched and packed promptly after harvesting.
FOR YOUR CONVENIENCE
MATURITY ..... YOUNG
SIZE No. 3 ..... MEDIUM
No. 2 CAN ..... 1 LB. 4 OZ.
2½ CUPFULS ..... 5 SERVINGS
SALT AND SUGAR ADDED
THESE PEAS ALREADY COOKED. DO NOT OVERCOOK.
TO SERVE WARM
Pour liquid into saucepan. Boil down to about one-half. This preserves good food values. Add peas. Heat only a few minutes. Add butter, salt and pepper to taste.
CREAMED PEAS
Prepare as above. Add cream or top milk.
EXCELLENT FOR SALADS
When used for salads, chill before serving. Save the liquid for soups and gravies.

Premier label is an example of helpful information, including recipe suggestions.

3. Net contents of the can, jar or carton.
4. Ingredients (certain foods, such as mayonnaise and margarine for which the Government has set standards of identity, do not require a declaration of ingredients).
5. Statements of dietary properties, if special dietary uses are claimed.
6. Statement of artificial coloring, flavoring or chemical preservatives, if used.
7. If below basic standard of quality or below standard of fill of container set by Food and Drug Administration, must so state in prescribed legal manner.
8. All words, statements and other information required by law must appear in the English language.

What are some of the additional qualities about products in which the consumer is interested? The items vary with each product, but most of the factors are listed below. A good descriptive label will have this kind of information:

1. An up-to-date picture of the product reproduced as accurately as possible to give the right idea of color, size and appearance; perhaps illustrating use.
2. A statement of size, maturity, color, variety, style of pack, packing medium, seasoning, spices, etc., depending on nature and characteristics of product.
3. Detail about quantity. In addition to net contents required by law, the number of portions, number of pieces, number of cupfuls, size of can, etc., should be given.
4. A brief description of raw product, possibly with method of processing.
5. For some products, directions for use, with brief but specific instructions, possibly recipes.
6. Specific information about the use of this particular quality of product.
7. Brand name and other identification well and attractively displayed.
8. Mention of recipe books or other available literature, when possible.

Mrs. Smith may want stockings that will give long service and so buys a service weight—probably a 42-gauge—knowing they will not look nearly as attractive as sheer hose. Mrs. Jones may want very sheer hosiery, so she buys 60-gauge and knows they won't last as long as would service weight. The only sound answer from the consumer's standpoint is to describe accurately each important measurable quality and give Mrs. Homemaker a chance to buy according to her own needs.

The same line of reasoning applies to foods. Each person

NAME OF PRODUCT . . . . PEARS
VARIETY . . . . BARTLETT
STYLE OF PACK . . . . HALVES
PACKING MEDIUM . . . HEAVY SYRUP
SIZE OF CAN . . . . No. 2½
CONTENTS . . . . 1 LB. 13 OZ.
CUPS . . . . APPROX. 3½
SERVINGS . . . . APPROX. 7
BLUE KNOT
YELLOW CLING
Peaches
HEAVY SYRUP

Fruit label has listing of factual information supplemented by descriptive "sell" copy and serving suggestions.

is entitled to know what she wants to know and should have freedom to select the merchandise she wants based on good descriptive labeling.

Manufacturers who now have inadequate labels do not have to wait until after the war to start getting better labels. It isn't even necessary to wait until industry-wide specifications are adopted before improving labels. Unless each manufacturer has studied the labels on his products recently to determine how closely they meet consumer needs, no new print order should be started until such a check has been made.

Through the Grocery Mfgrs.' Information Council of GMA, we are in touch with consumers to find out just what they want on labels. Also the Grocery Mfgrs. of America have appointed a women's committee consisting of outstanding women executives in the industry. One of the functions of this committee will be to advise on how to improve labels.

Here is one suggestion which recently came to us from consumers: To conserve space on pantry shelves, homemakers stand packages such as cereals with the edge of the package to the front. Thus the brand and the product name is not visible when she opens the pantry door. If the brand and product name are printed on the side of the package as well as on the front, it will be easier for the homemaker to identify the package and the food manufacturer will have a better opportunity to keep his brand on display.

Frozen, cooked and eaten in the package

After the war you may get these frozen packaged steak dinners at your neighborhood store. All you do is take off the cover and put the plate in oven for 15 minutes.

The other day we had steak for lunch—with French fried potatoes and garden peas. We ate them right out of a package. The package looked something like a partitioned paper picnic plate.

We saw the whole package taken from a frozen food cabinet with the food already arranged on the plate, complete for serving at the table. The package was put into a special oven and cooked. In 15 minutes the whole plate of food was ready to eat—thick juicy steak, French fries crisp and brown, peas as flavorsome as if picked that morning.

Every day several thousand of these frozen packaged dinners are loaded on Naval Air Transport planes and served aloft on flights across the Atlantic and Pacific.

Other war agencies are planning to adopt this system of Sky Dinners and domestic airlines are studying it also.

After the war, you may be able to go to your local food store and order complete dinners for each member of your family, packaged and frozen, ready for you to cook and serve in about 15 minutes. No fuss, no muss. And after the meal, no plates to wash. You simply throw the paper plate away.

This spectacular, time-saving development in the field of frozen foods has just been announced by the Maxson Food Systems.

Packaging is one of the important factors. Required was a throw-away type of plate that would withstand high temperatures. An ordinary molded pulp plate would not do this, but, treated with phenolic resin plastic coating on the side of the plate which holds the foods, the plates become sufficiently heat resistant and liquid holding. The formula for this coating is adapted from one developed by the armed forces for the interior coating of gasoline cans. By means of such coatings, these containers have been converted overseas after their original usage into containers for drinking water and cooking purposes. The coating is non-toxic and odorless. Castor oil is used as the solvent.

Maxson coats molded pulp plates with this formula in its own plant. The plates are then loaded with the partially pre-cooked food. A paper disk is placed over the top, held in place with a collar of transparent cellulose acetate. On the paper disk is an illustration of a stewardess serving one of the plate meals to a passenger aboard an air liner. The trade name, "Maxson Sky Plate" is lettered above the illustration. Below the illustration, contents and ingredients are described.

Typical menus for the packages are as follows:

(1) Steak, French fried potatoes, peas; (2) meat loaf, candied sweet potatoes, spinach; (3) beef stew, hot bread, asparagus; (4) corned beef hash patties, home fried potatoes, string beans; (5) ham steak, candied sweet potatoes, turnips; (6) breaded veal cutlet, home fried potatoes, carrots.

All of these foods are partially pre-cooked, then packaged and frozen in the package. The foods are preferably cooked in a specially developed oven, which will cook the food in 15 minutes. Special ovens for this purpose have been developed by Maxson and are used on the planes for cooking the food. Small home ovens will be offered postwar suitable for cooking six of the plate dinners at one time. These are to cost between $25 and $30, maybe less. You don't have to cook these frozen foods in these ovens, but in the ordinary kitchen range they take 45 minutes to cook instead of 15 minutes and when cooked this way they do not match the quality of regular fresh-cooked foods, the company says. The special oven is designed so that heat is distributed to both top and bottom of the dinner at the same time.

Maxson says the packaged frozen food plates to serve one person will sell in postwar food stores for about twice the cost of raw foods. For a steak dinner this would be about $1.00 per serving including two frozen vegetables, depending, of course, on current food prices.

The company hopes to improve the package by providing a moisture-vaporproof plate as well as one that will withstand heat. The estimated cost of the packaging per serving will be about 2 cents. In general commercial practice the transparent collar may be eliminated for a less expensive type to hold the paper cover in place, but this too must depend

This group shows variety of menus. The throw-away plates of molded pulp are coated with phenolic resins to withstand high temperatures. Food may be eaten right from plate. There is no tiresome dish washing.

on the future costs of the necessary transparent materials.

The development is an achievement of W. L. Maxson, president of The W. L. Maxson Corp., engineers and manufacturers of a number of highly important military devices. Mr. Maxson, an Annapolis graduate and a former Naval officer, has contributed to the war a machine gun mount, automatic computing equipment and many specialized devices for the aeronautical field. He is also inventor of the gasoline pump device which instantly records the price as well as the amount of gasoline poured into an automobile tank.

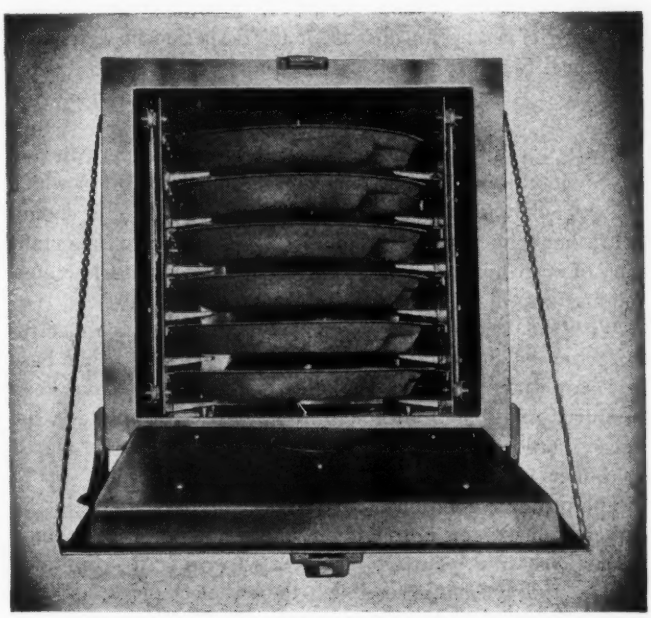
The Maxon Food Systems originated at the West Orange home of Mr. Maxson where he pondered the disposition of a surplus of vegetables he had grown. His aim was to invent a method by which the units of a complete meal might be pre-cooked to within a brief period of minutes necessary for final cooking. Each vegetable, each meat require different lengths of time in cooking. However, if they are all pre-cooked to the proper point, all may be brought together and given the same length of time for final cooking. Brought together on a disposable blue-plate, frozen and stored—the Maxson meal is ready to serve after a final few minutes of cooking in a Maxson Whirlwind oven which completes the cooking of the various components of the meal in exactly the same period of time.

Experimental work was carried on at a company laboratory in Elmhurst, Long Island, where food technologists made tests of various methods of food preparation, food storage and freezing. In conjunction with the food testing, experiments were made which resulted in the development of the oven capable of cooking the frozen food properly in a few minutes.

A large food plant is now in operation in Queens Village, Long Island, where the Sky Dinners are prepared, packaged and frozen, ready for shipment on the military planes. All production at this time is limited to military uses but the company sees a vast civilian market, where these prepared meals may be sold from frozen food cabinets and offer the housewife the chance to serve a complete dinner without troublesome preparation and without waste.

CREDIT: *Plates, Keyes Fibre Co., Waterville, Maine. Cellulose acetate collar, Celanese Plastics Corp., New York.*

Food has a better flavor when cooked in special oven.



Ovens to accommodate six packaged dinners will be offered after the war, expected to sell for about $25 or $30.

Food containers . . . an IFT symposium

Interest of the food field in wartime packaging developments applicable to their products was evidenced by a special packaging symposium which occupied the May meeting of the Institute of Food Technologists in New York. Speakers were technical representatives of companies dealing with six basic packaging materials.

T. M. Rector, vice president in charge of research of General Foods Corp., presided and in his opening remarks stressed packaging's claim to a fair share of food research expenditure. Many food companies still allow as much as 15% for research on raw material, he said, but allot only about 2% to packaging research. Several of the speakers who followed emphasized that while the technical staff of the packaging supplier stands ready to fill any specification, it remains for the food manufacturer to state in precise terms the degree of protection he wants for his product.

Glass

Recent accomplishments in the lightweighting of glass containers were cited by Dr. H. A. Barnby of the Owens-Illinois Glass Co. who displayed several examples of containers which, through careful architecture, have been reduced more than 50% in weight without appreciable loss of strength.

One of the most impressive comparisons was of the prewar beer bottle which weighed 16 oz. with the present one-trip bottle which is being used for military off-shore shipments and which weighs $6^1/_4$ oz.—a saving of 60%. Baby food jars which only a few years ago weighed $6^1/_2$ oz. are now down to $3^2/_{10}$ oz.—a reduction of 50%. Weight of the 1-lb. vegetable jar and of the coffee jar has similarly been cut in half. The new square quart milk bottle weighs $17^3/_4$ oz. and occupies less space than the round bottle which, as recently as 1936, weighed 22 oz.

Dr. Barnby also presented charts to show that in recent years the cost of glass containers has been reduced by one-third, while per capita consumption has increased by approximately the same amount. There was a marked rise in glass container consumption just prior to the period in which war influences began to be felt, he said.

Tin

Dr. F. C. Baselt, manager of research of the American Can Co., pointed out that the protection against corrosion which the extremely thin coating of tin gives to a steel can is chemical rather than physical. Thus the steel base is an important part of corrosion resistance and recent changes in the manufacture of steel have resulted in improved containers.

With the wartime development of continuous strip electrolytic tinning lines, tin coatings as thin as $^1/_{10}$ lb. per base box—approximately five millionths of an inch—have been produced and tested, although at present $^1/_4$-lb. plate is the lightest used commercially and most electrolytically plated containers are in the $^1/_2$-lb. and $^3/_4$-lb. weights.

The protective action of tin on electrolytic tinplate in the presence of oxygen is roughly proportional to the thickness of the tin coating. Current results of heavy research programs indicate that when it is possible to deposit electrolytic coatings of weight equal to hot-dip coatings, equal performance will be achieved.

Enamel-coated electrolytic plate, either $^1/_2$-lb. or $^1/_4$-lb., is superior in rust resistance to standard plain hot-dip plate and for all practical purposes is as good as enameled hot-dip plate.

It is certain that electrolytic plate is here to stay, Dr. Baselt said. Before the war it was used for coffee cans and dry products; when peace comes, it will be used for many products, with the question of just how many to be answered by (1) the economics of its use and (2) the improvements in its corrosion resistance.

Although Bonderite K treatment of sheet steel has been a valuable tin saver during the war, particularly on can ends, its use is not expected to increase in peacetime, Dr. Baselt said. Bonderite K process plate is all but impossible to solder commercially on can-making machines built for tinplate and the adaption of these lines to this operation is so expensive that a more favorable economic solution lies in the use of the easily solderable $^1/_{10}$-lb. and $^1/_4$-lb. electrolytic plates.

Protective coatings

Substantial improvement in the performance of containers through the use of improved protective coatings may be expected postwar, according to Harvey Hopkins, general manager of purchases of the American Can Co.

Prior to the war, he said, metal containers were coated primarily with oil-modified, natural or synthetic resins. Some use was made of straight synthetics such as plasticized phenolics and the copolymers of vinyl chloride and vinyl acetate, with occasional use of wax coatings for special purposes.

Added protection has been given to products packed in paper containers through incorporation of resinous sizing materials in the paper, impregnation and duplexing with asphalt and waxes and through the application of organic coatings, waxes and wax emulsions.

During the war, many of the drying oils and resins have been unobtainable for their original uses. It soon became apparent that the protection provided on commercial containers, both metal and paper, was entirely inadequate to meet requirements in the battle zones and development work was immediately started. The critical shortage of tin also had a stimulating effect on the development of coatings. Further impetus was the necessity of quickly obtaining suitably treated fibre or composite packages for such products as spices, talcum and tooth powder, paints and varnishes and many others for which metal was unobtainable.

Materials which have been an outgrowth of the last four years of intensive development include improved drying oils, many new oil-modified and straight synthetic resins and improved waxes. Drying oils are now available which for many purposes are superior to the natural oils previously used. Oil-modified synthetic resins are available for protective coatings which are paler in color and therefore permit more pleasing decorative effects as well as considerably more protection.

But the biggest field of development has been in the straight synthetic resins. Many of these products are still on the secret list and announcements have been made of many new developments only to have their use for general packaging requirements restricted by the need for direct military uses.

A wider variety of resins based on the vinyl compounds will

be available postwar, such as the tripolymer VMCH resin, which is a combination of vinyl chloride, vinyl acetate and maleic anhydride. Polystyrene resins and the acrylates are among those which will be factors in the postwar market and the silicone resins are an example of an entirely new type which will be available.

Paper

Gradual improvement in the supply of paper packaging materials can be expected to start at some indeterminate point following V-E Day, said F. S. Leinbach, assistant general manager of the Riegel Paper Co., in reporting on this subject. Improvement will be due, he said, to somewhat lessened war demand and to the availability of foreign pulps. Some results may possibly be seen in the fourth quarter of this year—not only increased availability but better delivery service from the mills and closer approach to prewar quality.

The wartime paper industry has been characterized not so much by fundamental advances in new knowledge as by tremendous advances in technique, in making widespread the application of prewar knowledge. For example, the technique of wood-pulp production is fundamentally unchanged, but with the trend toward greater production of kraft and more effective bleaching of both sulphate and sulphite pulps, the food packager will have cleaner, stronger, whiter papers to fit in with the trend toward more and more unit packaging.

A big advance in technique has come about through learning to use the products of other industries to modify and amplify the qualities of paper. In this category is the increased use of synthetics, resins and waxes, greatly enhancing such qualities as wet strength, appearance, printability, greaseproofness and MVP. The paper plastic laminates have a future in packaging as yet unknown.

We can hope for modifications of wax coatings to enable stronger seals and better folding qualities. Lacquers and special thermoplastic coatings are being more widely applied and the result is a much wider use of heat-sealing as a packaging technique. Added qualities such as MVP and greaseproofness are enabling wider applications of paper products whether in webs, bags or boxes.

In laminations, which are increasingly attracting the interest of the paper field, new combining materials are being used which of themselves have better adhesion, better MVT rates. Interesting new "paper" packages will result from the combination of paper and materials such as films and aluminum foil.

The greatest advance of all in technique in the paper field has been in the scientific development of the paper technician himself. He has educated himself to the fundamentals and the requirements of food packaging. He has learned techniques for measurement, both qualitative and quantitative, of the properties required in food packaging.

Much of this advance has been war-born, mothered by necessity. All of it has been accomplished in the face of depleted laboratory personnel, but accomplished through close cooperation between the food technologist and the paper technologist.

Fibre

The most important recent development in the fibre box industry, said Albert W. Luhrs, consultant to the Weatherproof Fibre Box Group, has been the tremendous demand for V and W boxes for overseas shipment of subsistence items, resulting in the present shortage of domestic containers for food and other products.

During 1944, approximately 4¼ million tons of paperboard were consumed by corrugated and solid fibre box plants. Approximately 20% of this quantity was used in the manufacture of some 450 million V and W boxes, of which 85% were used for subsistence items. By offsetting the comparatively heavy V and W boxes with a general reduction in the amount of board used in domestic boxes, it was still possible to produce almost a record number of containers.

Approximately 5 billion fibre boxes were made during 1944, of which about 2¼ billion were used by the food industry.

The production of domestic boxes must now be further curtailed. Government agencies are attempting to conserve in all possible ways and one such step is the introduction of W-5 and W-6 boxes, which use less paperboard and kraft pulp than V boxes and are satisfactory for the less-heavy shipments. Many Army and Navy specifications which required the use of V-1 boxes have been changed to V-2 or V-3, requiring less of the critical materials.

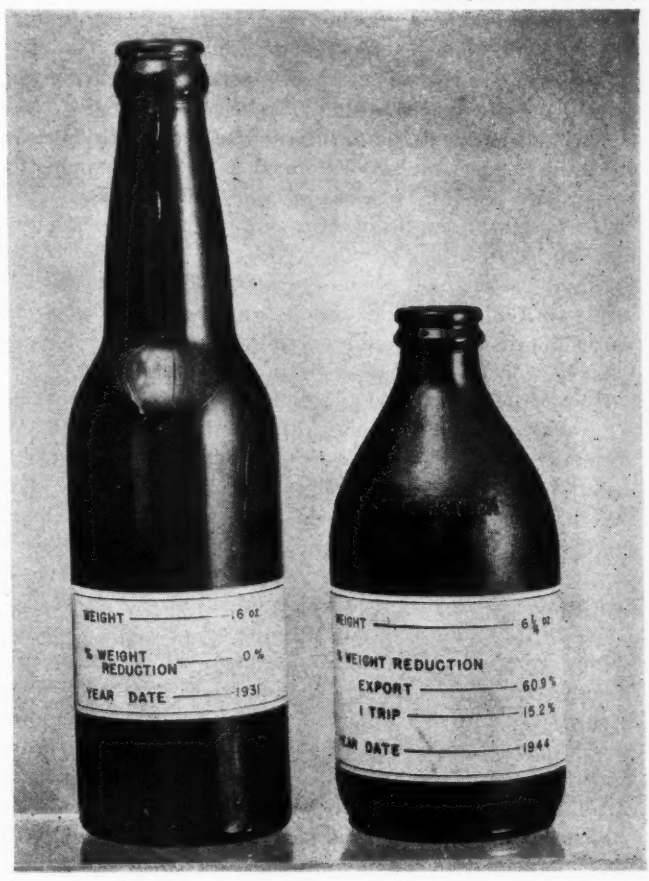
Nevertheless, the over-all demand for V and W boxes is constantly increasing. Shortage of wood cases, as in the shipment of shell eggs, and excessive damage to other products making use of non-fibre containers has dictated increased use of fibre which over-balances the savings effected. Therefore, a continuance of the present short supply of domestic fibre boxes until at least the end of the 1945 canning season can be expected.

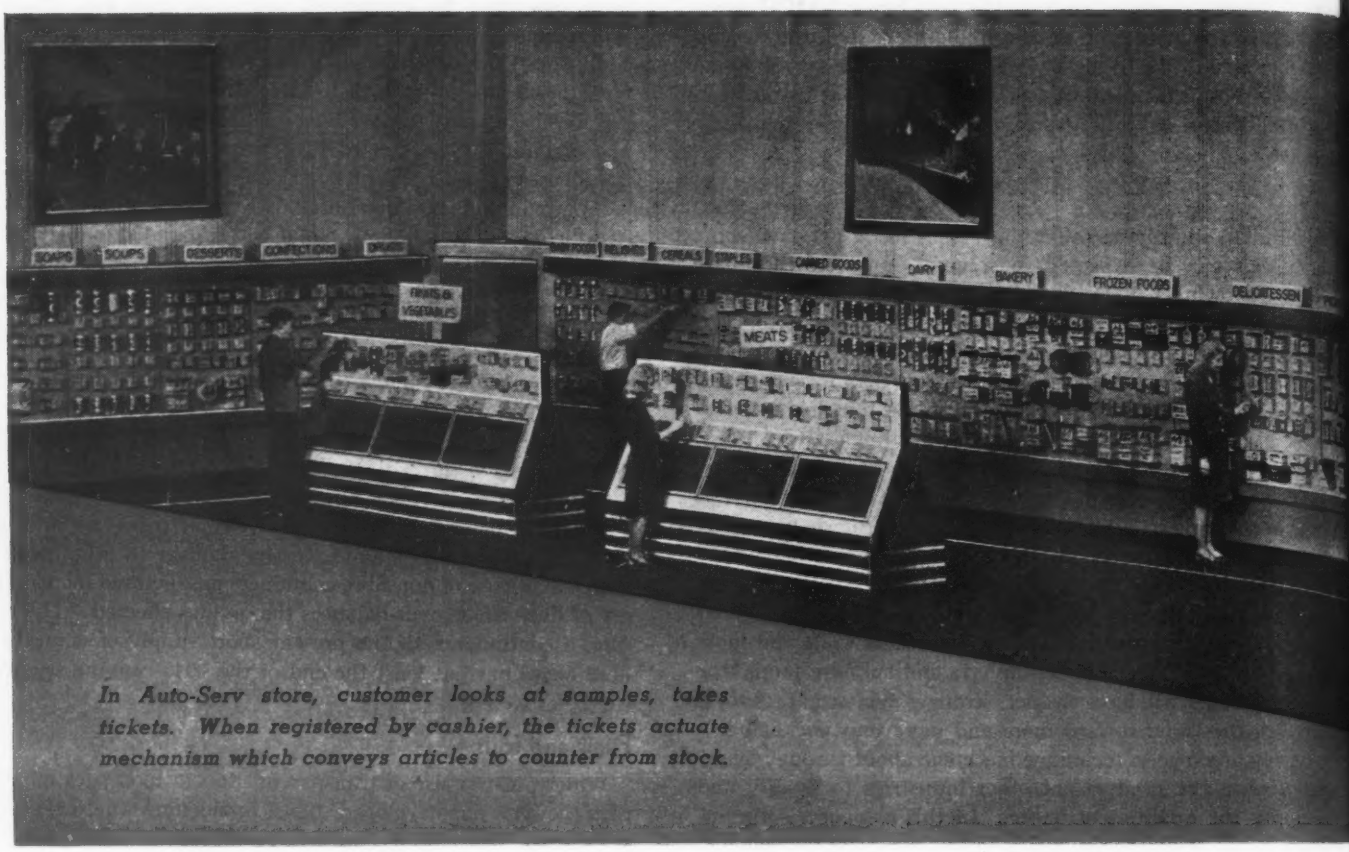
Films and foils

Wider postwar use of transparent films in food packaging, with newer, war-developed films broadening the field in specialized applications, was forecast by A. F. Wendler, manager of acetate films, Cel- (*Continued on page 170*)

Prewar beer bottle compared with new light-weight "no deposit, no return" bottle. Weight has been cut from 16 oz. to 6¼ oz., but capacity and strength are same.

PHOTO, OWENS-ILLINOIS GLASS CO.





In Auto-Serv store, customer looks at samples, takes tickets. When registered by cashier, the tickets actuate mechanism which conveys articles to counter from stock.

Mechanized merchandising...*the Auto-Serv*

More and more engineers and technical men are invading the merchandising branches of industry.

This may be due partly to their dislike of the hurly-burly of the average American retail store when they do shopping for their wives. Or it may be the inherent desire of their profession to bring the efficiency of assembly-line methods to the distribution functions of industry.

At any rate, many plans are being offered for postwar mechanization of the retail outlet. Some of these work on the automat principle. Some involve the coin-in-slot principle. Some have merit and some are beautifully impractical.

However, all this thinking is already at a point where large retail operators are listening to the possibilities. And all of the plans are based on one essential premise—that merchandise to be handled mechanically must be prepackaged. For that reason such developments are also being watched by every manufacturer who can bring his products to market in a package, whether they are dry groceries, meats, vegetables, delicatessen items, drugs, cosmetics or hardware.

One of the interesting but still untried methods of mechanizing wholesale and retail establishments is the Auto-Serv, invented by P. M. Farmer, an electrical engineer of West Orange, N. J. To the manufacturer of packaged merchandise Mr. Farmer's plan appears to offer advantages because of its versatility in handling packages as varied in size as a large carton of soap flakes or a tiny wrapped cake of yeast.

Many plans for mechanized merchandising, it is said, have been impractical for handling the 1,500 to 3,000 items stocked in modern retail food stores because of the wide variety of shapes and sizes of packages involved. Mr. Farmer aims to apply the basic engineering principles which account for superior efficiency in production-line technique to commercial activities. His plan is based on extensive detailed studies of actual operations in the retail field.

To justify the investment involved in such operations, mechanized operations, he believes, must be capable of (1) handling a heavy volume of business (2) in a small space (3) at minimum cost, (4) provide for the accounting necessities, (5) eliminate the weaknesses of the human equation in the handling and routing and (6) provide outstanding appeal to both the customer and the merchant.

This is the way Mr. Farmer's Auto-Serv works: Only samples of the products are displayed in the store. As a customer enters, she passes by a series of display panels on which are affixed actual packages of merchandise. Next to each package is a rack of tickets. If she wants a particular package, she pulls off a corresponding ticket. When she completes her selections, she takes all the tickets to a cashier's counter. She has no packages to carry around the store—and everything is arranged with the precision of a library catalog.

The cashier puts the tickets into a recorder control station which automatically produces a sales slip listing item number, the price of the individual items and the total amount of the purchases. This amount is collected from the customer who then moves on to the delivery counter.

As the total is recorded, the serial number of the "sales

Cashier puts tickets into recorder control. As total is recorded, dispensing units are actuated in stock room.

slip" thus produced is simultaneously recorded for identification. As each item number is being recorded, certain electrical contacts are operated which result in actuation of the corresponding dispensing element in the stock room.

As released from the dispensers, the packages move by conveyor belt to a delivery clerk's station adjacent to the cashier's stand. The delivery clerk stacks the items as they come through in an inclined chute-like bagging fixture. He then slips a bag over the bagging fixture, releases the load into it and hands it over to the customer who turns over to him the sales slip with corresponding number which she has received from the cashier. The entire transaction, from the time the order tickets are presented to the cashier until the wrapped order is handed to the customer, would require, it is said, only a matter of seconds.

Installations of this type ought to cost in the neighborhood of $10,000, it is estimated. The relocation of but a single employee, it is stated, will justify this investment. The elimination of pilferage, a costly item in self service markets, should also provide a handsome return. In addition to retail and department store operations, wholesale and mail order houses also might facilitate the handling of orders with this

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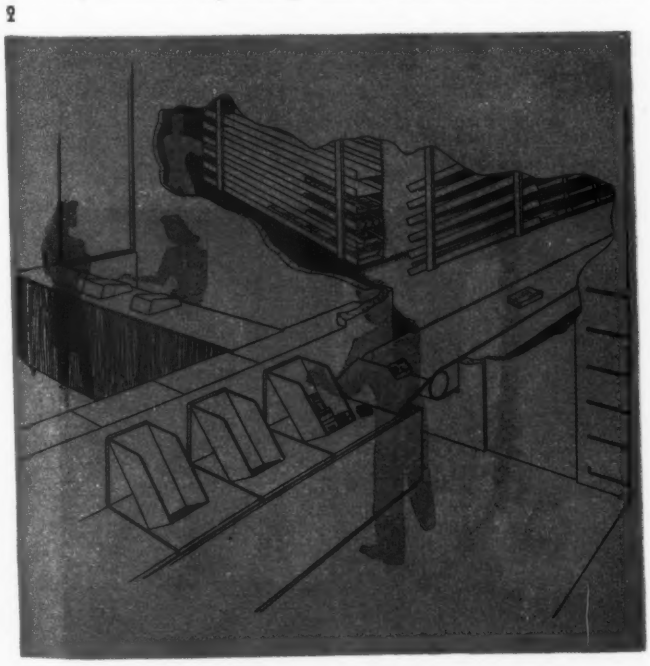


Clerk stacks items as they come by conveyor from stock room to bagging fixture and gives them to the customer.

3

By use of lane dividers and separate tripping elements, varisized packages can be handled on same dispensing unit.

revolutionary type of mechanized merchandising equipment.

One of the most important factors in making practical the mechanized handling of a miscellaneous variety of articles is a comparatively inexpensive, readily adaptable type of dispensing element, Mr. Farmer says.

Although no single type of element can be expected to handle the wide variety of items carried in a modern retail food store, the dispensing element developed for the Auto-Serv will handle a very high percentage of such items (Fig. 3). Versatility of the element is indicated by the fact that any of the wide variety of articles shown stacked around the base of the element in the illustration can be handled in the same type of equipment. Many small items may be handled in a single dispenser by use of lane dividers and separate tripping elements.

Stacks of two or more items carried abreast of each other in a single element may be released in multiple quantities by a single actuation. In a similar manner, fixed combinations of two or more different items may be simultaneously released on a single actuation. Controls may be arranged so that such combinations may also be made up from different dispensing elements.

For handling frozen foods or perishable items such as fresh meats and vegetables, the dispensing elements may be housed in a refrigerated atmosphere. Another group of elements may be placed in a properly humidified atmosphere for such products as tobacco.

Dry groceries, which comprise the largest volume in the food market, have been prepacked for years and will present no problem in mechanized handling such as the Auto-Serv, it is said. Dairy products, too, are to a large extent prepackaged in suitable form for such mechanized handling. Distributors of fresh meats and vegetables, in considering their future packaging plans, however, should give the question of mechanized merchandising considerable attention, since many of these products will be newly packaged and can be planned from the beginning for such future handling in retail stores.

Since only samples are displayed in the salesroom, an entirely new type of store is possible. J. Gordon Lippincott of Dohner and Lippincott, industrial engineers, who have styled some of the Auto-Serv interiors, predicts markets of this type that may even be carpeted and take on the atmosphere of a Salon.

Mr. Farmer also suggests a means for handling mechanically items such as dressed poultry, melons, etc., which require handling on a random-weight basis. A practice used for selling cigarettes from coil-actuated dispensers would meet this situation. Suppose, for example, that a customer selects a 5- to 6-lb. chicken at 50 cents a pound. The customer would be charged the top range price of $3. If, however, the chicken actually delivered weighed less than 6 lbs., the accompanying cellophane envelope carrying a statement of actual weight and corresponding price would include coins (or a credit slip) to compensate for the difference between the net price and the top range price collected.

One important requirement in the successful mechanizing of these operations is that coordinated means be provided for handling every single item of the entire line. Special provisions are thus made with Auto-Serv for handling such widely different items as perishable meringue pies or bulky items such as 100-lb. sacks of potatoes.

Mr. Farmer, who is a professional engineer of long standing, claims that Auto-Serv systems are being engineered on a firm foundation of factual data obtained from extensive field studies.

The one big advantage of mechanized merchandising will be to speed up the handling of traffic during rush hours and to facilitate the back-scenes handling of tomorrow's merchandise. Just how such plans will eventually be worked out in actual practice is yet to be determined, but the package is the starting point and therefore an essential consideration in the future packaging of all consumer goods.

Molded plastic inhalers

Molded plastic inhalers are a prewar development, but they have come into much wider usage since aluminum inhalers have become limited for civilian purposes.

Because of the colorful effects that may be obtained and the efficiency of these plastic containers, makers are confident that the demand will continue after the war.

The plastic inhalers are made of urea formaldehyde. This molding compound was selected because it was the only one of many tested that met all the requirements placed upon it. Some other materials offered promise but were not resistant to the oils and medicaments used as inhalants. In addition to its adaptability for the molding operation, and its attractive appearance, urea compound is neither affected by nor affects the medicants used.

The inhalers consist of three parts: body, nosepiece and cap, all produced on automatic compression molding machines. In some cases printing is done directly on the plastic; on others, labels are affixed.

A number of drug manufacturers are using plastic inhalers produced from private molds to obtain individuality for their particular product. Stock molds, however, are available for the user who does not require a private mold.

CREDIT: *Inhalers, produced by Closure & Plastics division, Owens-Illinois Glass Co.*

View of conveyor line showing how sugar bars are delivered to 12 girls who wrap the output of one press, approximately 7,000 bars per hour.

ALL PHOTOS COURTESY GENERAL FOODS

Compressed sugar . . . a million bars a day

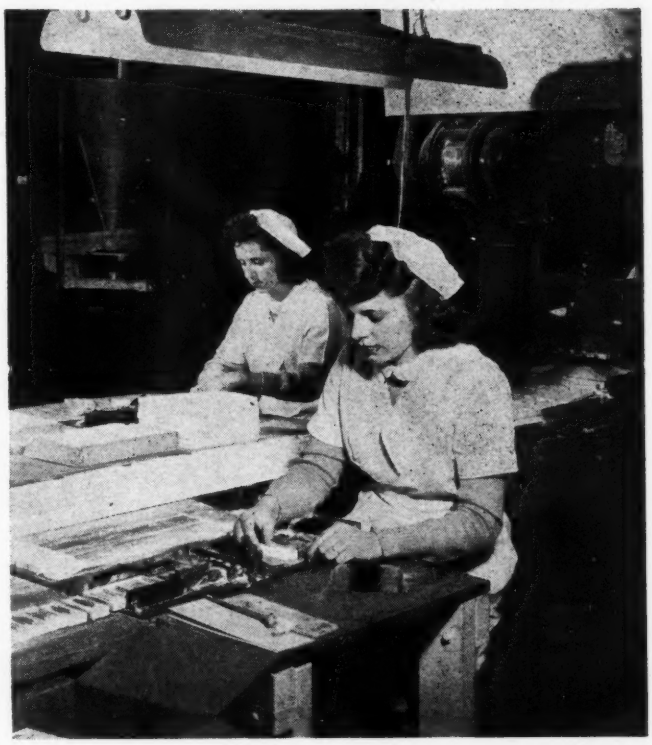
*by Lt. William H. White**

Packaging of compressed sugar is one of the more interesting problems which the Quartermaster Corps has had to solve during this war. To understand the problem, it is necessary to know a little about the history of sugar in Army rations.

Regular lump sugar tablets of standard size were first used in rations because they were easy to handle and were already being commercially produced. However, as the ration procurement program grew it proved impossible to obtain a sufficient quantity of these commercial tablets. Small boxes containing 23 grams of loose sugar were then adopted, but it developed that they did not provide enough sugar for sweetening the fruit drinks and there was no room for a larger box unless some other component was taken out of the ration or the whole package was changed. It was at this point that the idea of compressing granulated sugar was conceived in the Q. M. Subsistence Research and Development Laboratory located at the Chicago Q. M. Depot.

Compressing granulated sugar permitted approximately 50% more sugar (1.2 oz.) to be packed in the same space hitherto occupied by the box or tablets.[1] It had another advantage in sweetening fruit drinks—quick solubility. These drinks are usually prepared cold and the compressed sugar will dissolve in less than one minute in a pint of water at 75 deg. F.

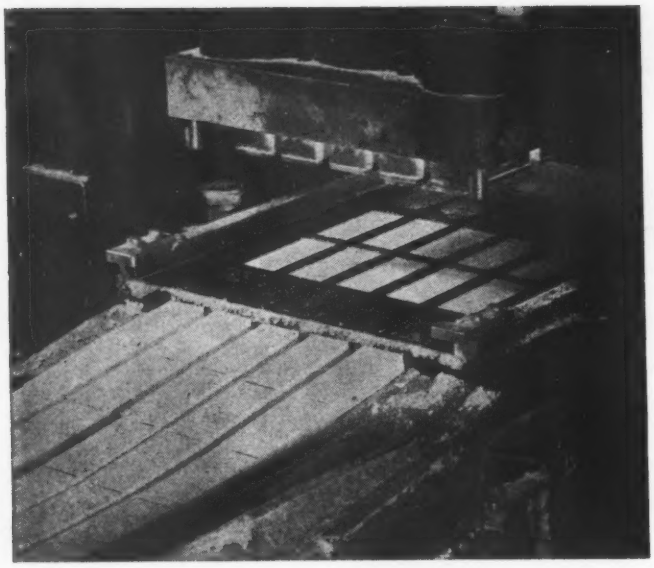
However, the adoption of compressed granulated sugar for emergency rations posed two problems. The first was how



Jig for wrapping. Each wrapper keeps backlog of bars for uninterrupted operation in case of shutdown for cleaning.

* Q. M. C. Subsistence Research and Development Laboratory, Chicago.

[1] See "Ration Packs," MODERN PACKAGING, November 1944, p. 91.



Showing 10-cavity die of converted tile press filled with measured amount of granulated sugar. The sugar is ready to be pressed by the raised punch in background.

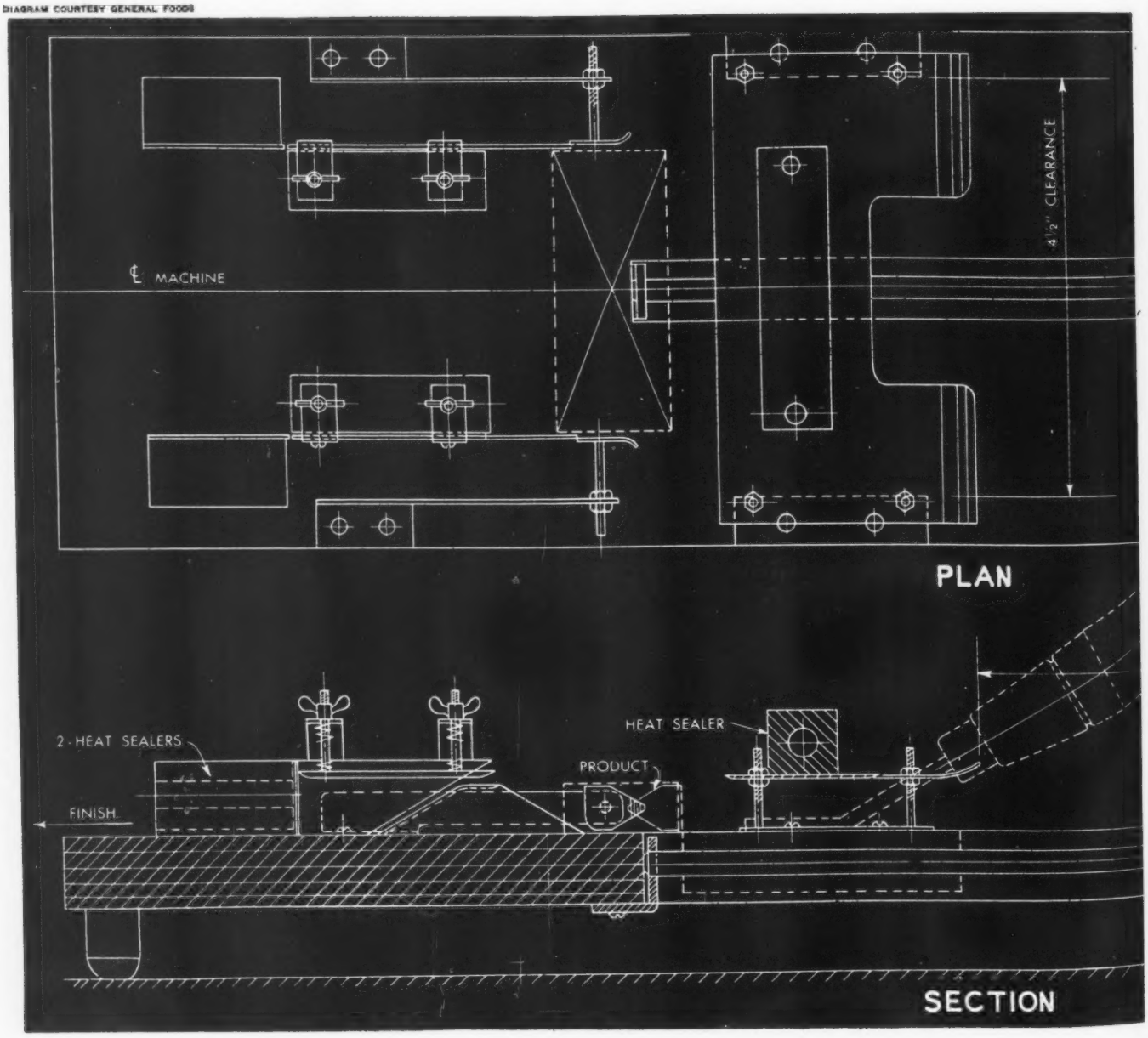
to compress sugar economically in sufficient volume; the second and hardest problem was how to package the compressed pieces.

The compression problem was solved by the use of tile pressing equipment. Several tile manufacturers had been compressing cereal for the Quartermaster Corps. These companies were induced to experiment with sugar. They, together with other manufacturers having pressing equipment, actively cooperated to find a solution to some of the production problems. The main one was the tendency of sugar to stick to the mold in which it is pressed. It was found that tile presses of the friction screw type were best adapted to this material. Consequently, several tile companies and some of the large food companies undertook the job of compressing the granulated sugar using leased or purchased tile presses.

Pressing was a minor problem, however, compared with the question of packaging. Each piece had to be packaged in a siftproof wrapper, because the edges of the sugar bar often

Blueprint (below, across two pages) shows how wrapping and heat-sealing of the tiny compressed sugar tablets are facilitated by the use of a special jig. Movement is

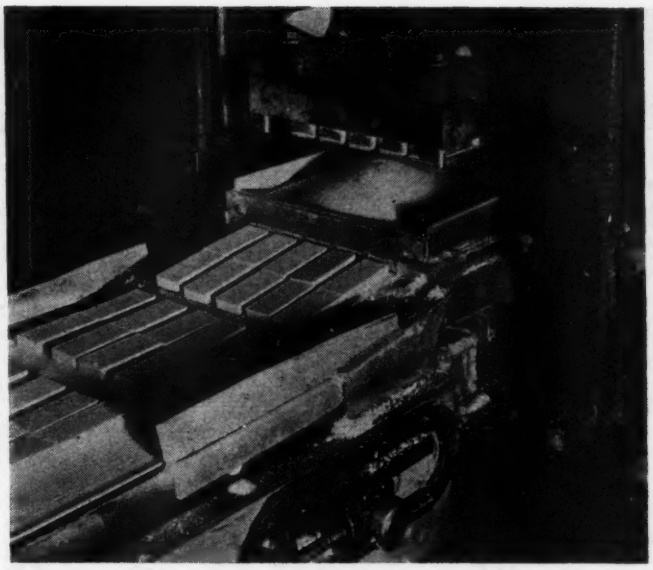
DIAGRAM COURTESY GENERAL FOODS



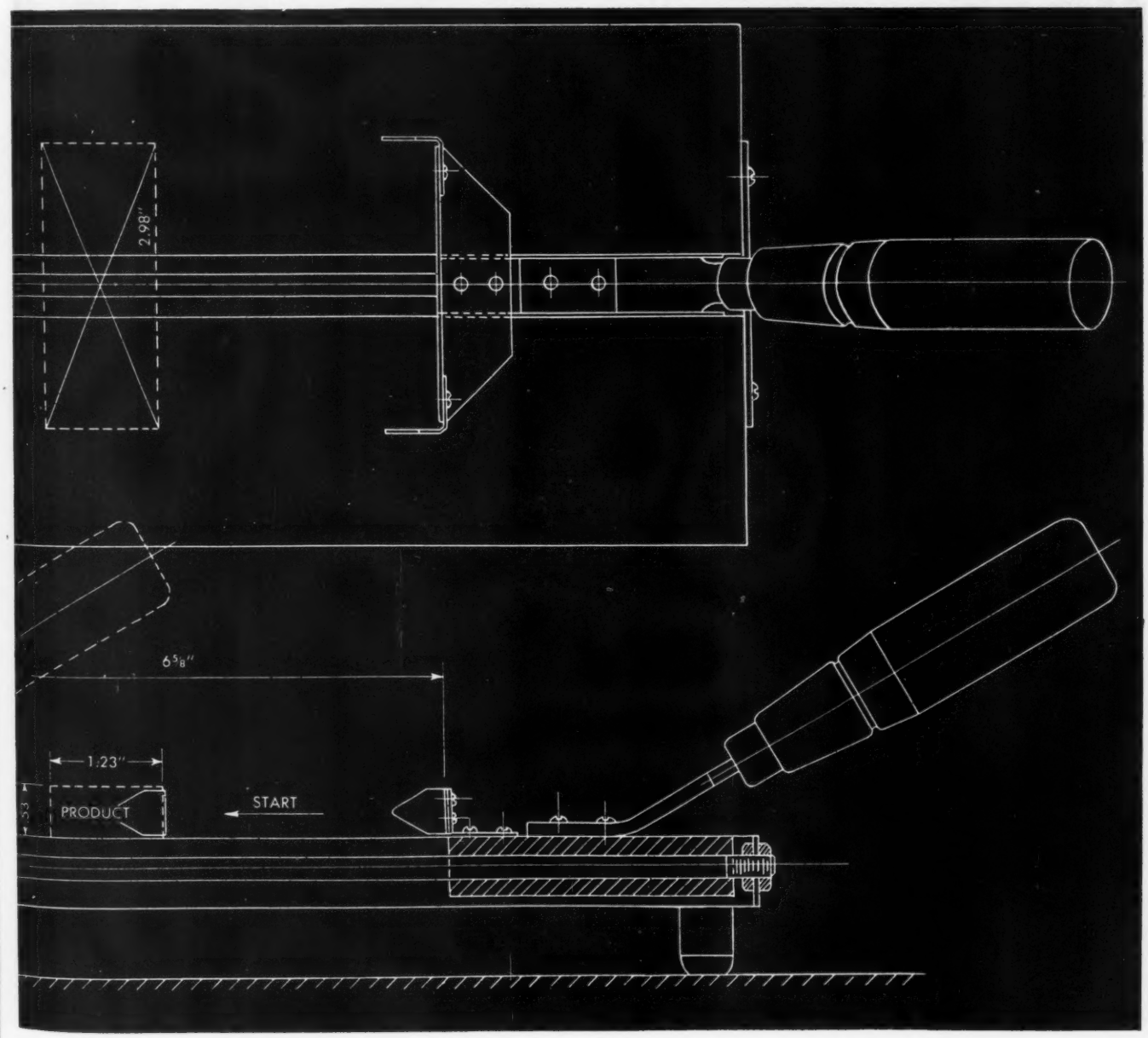
became broken in packaging and transit and when this happened some granulated sugar in the package might easily have sifted out. The large quantities involved—about a million pieces per day—complicated this operation. The pieces were so fragile that it proved very difficult to convert second-hand packaging equipment to do the job effectively and new equipment could not be designed and produced fast enough.

Fortunately, these bars of sugar were to be packed inside a laminated cellophane bag, which is itself inclosed in the wax-dipped ration carton. This eliminated the need to consider the moisture-vaporproofness of the package.

Cellophane was chosen as the wrapping material mainly because of its excellent heat-sealing characteristics. 450 MSAT 86 or 450 PMB2CS was specified because both had excellent cold temperature properties and both had an extra heavy heat-seal coating. In addition, cellophane made an attractive package. Finally, it had the advantage over a carton of taking up less space. This was quite important be-



After pressing, the bars of sugar are pushed onto a conveyor belt; at the same time a new load of granulated sugar is being filled into the dies for pressing.



from right to left. Although very successful in this form, this machine has since been improved by the addition of thermostats and various other improvements.

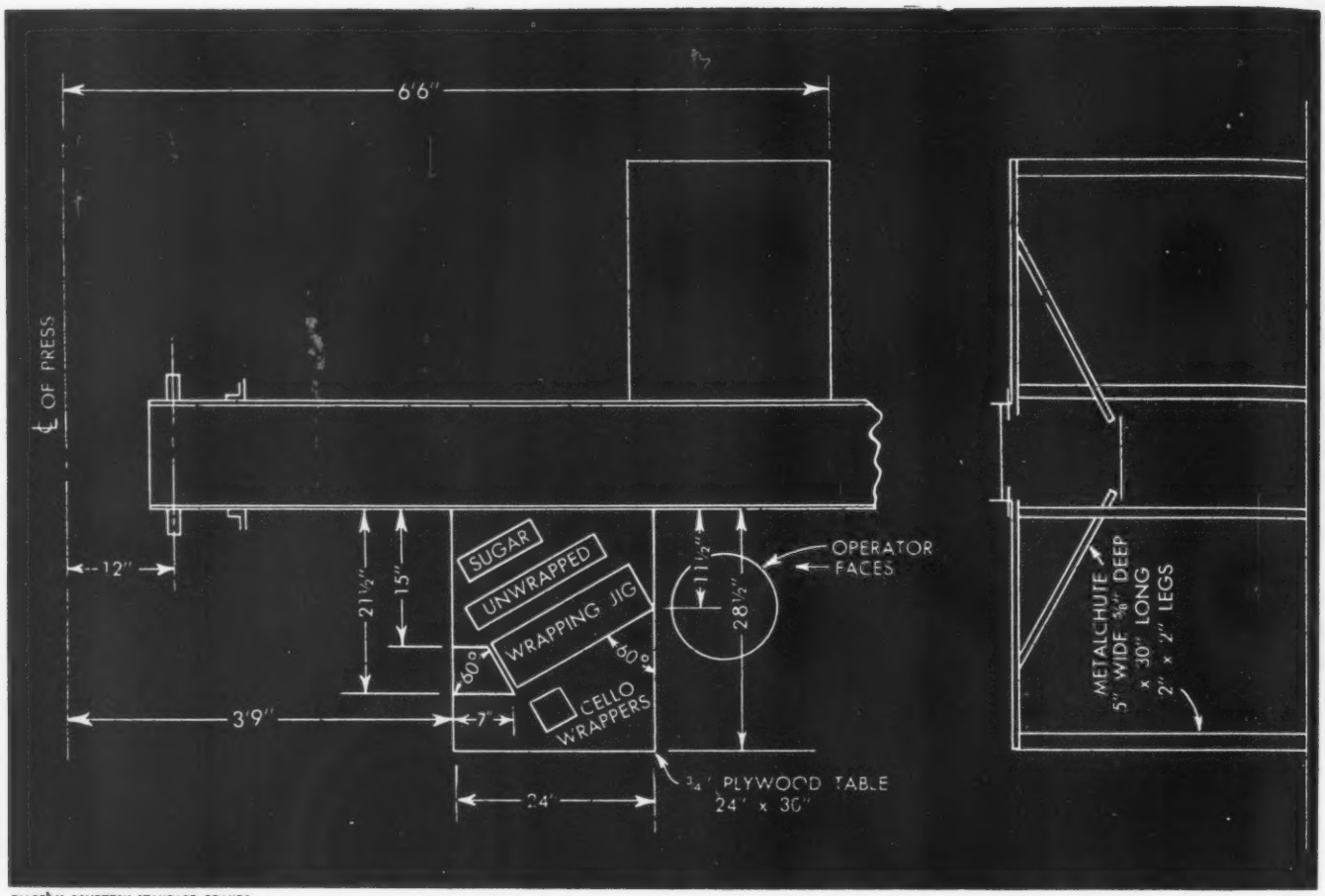
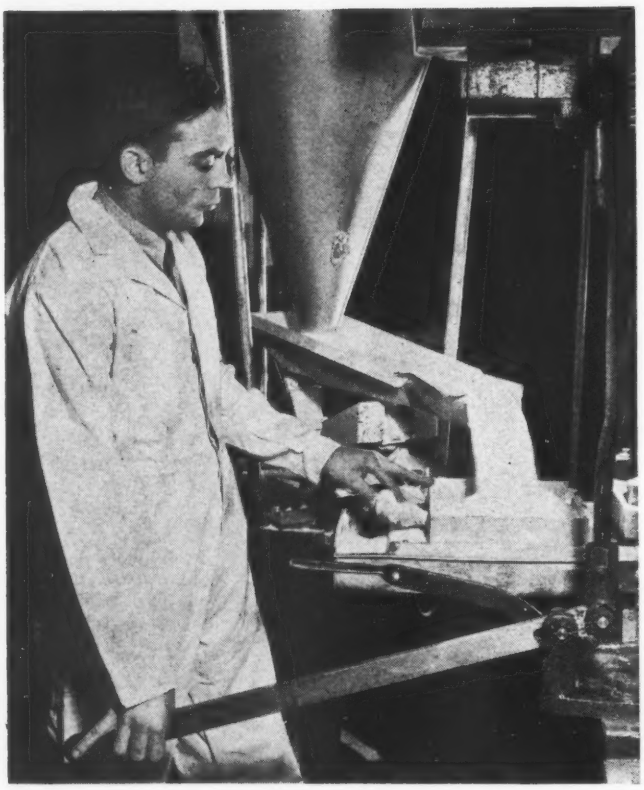


DIAGRAM COURTESY STANDARD BRANDS

Diagrammatic layout of one type of wrapping table showing chutes which deliver wrapped pieces to lower conveyor, which in turn delivers them to fantail packing table.



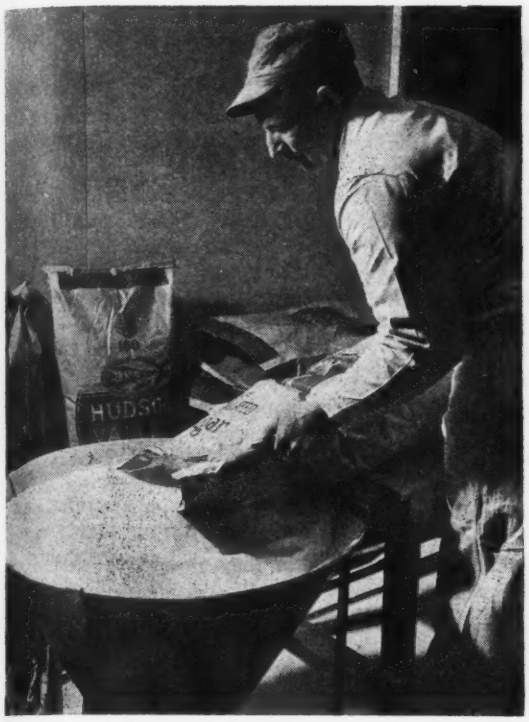
In the illustration above the operator actuates the press and fills the shaker box with sugar to be compressed at the same time. The vibrating trough, under the cone, is actuated by a small automatic switch which is located just below and slightly to the left of the operator's hand.

cause the maximum size of the sugar bar was strictly limited. The pieces of sugar could not be larger than $3^1/_8 \times 1^1/_4 \times {}^9/_{16}$ in. outside dimensions.

After thorough study of the available wrapping equipment, a type of sealing jig developed by the engineering department of General Foods in cooperation with the Gruenberg Electric Co. was practically standardized for wrapping these pieces. The jig is hand operated but is very gentle in its action on the sugar. An operator makes the original wrap around the bar and then pushes the bar and wrapper through an arrangement of folders and thermostatically controlled heat elements. These jigs were made available almost immediately and have been doing a fine job. Many improvements have been added to increase their efficiency. Each manufacturer has made those improvements which appeared to him to be best adapted to his problems and all producers have been unselfishly cooperative and willing at all times to pool their ideas so that others might use the good ones. In this way production has gone up steadily in all plants.

Actual wrapping production per operator varies widely in various plants and even in the same plant. The manual dexterity of the individual operator has a lot to do with it, as well as the design of the jig. The usual production line is arranged so that a conveyor delivers the bars to the operators directly from the press. Ordinarily, about 12 operators can keep up with a press. The average production per press is about 5,000 to 7,000 bars per hour, depending on various factors.

The relative humidity, the condition of the press, the ex-



Showing granulated sugar being fed into the hopper of the press from the floor above.

The finished, wrapped bars of compressed sugar are packed approximately 40 lbs. to a corrugated case for shipment to ration assemblers.

perience of the operator, the moisture content of the sugar and even the crystal size affect the rate of press production.

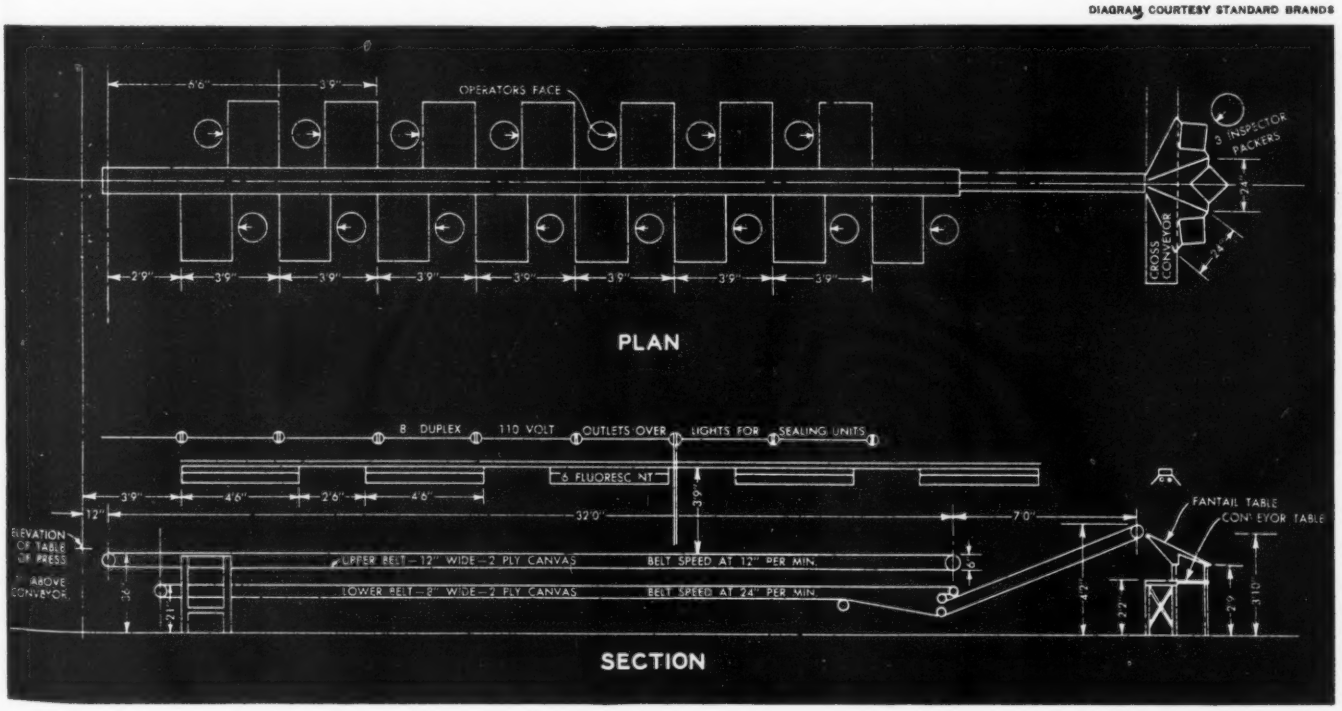
The average operator wraps from 6 to 10 pieces per minute over an extended period. Actually, for shorter periods operators have been able to reach speeds of 20 per minute, but these speeds are exceptional.

Production such as this involved a great amount of labor—so much, indeed, that it has been necessary to take the work to the people. One of the easiest ways of doing so has been to utilize idle canneries in rural neighborhoods where labor is available. At the present time about half a dozen such plants are producing compressed sugar. Altogether ten plants are producing and packaging sugar bars at the rate of approximately one million pieces per day.

The pieces are packed 500 to a corrugated container and then shipped to ration assemblers throughout the country.

A diagrammatic layout showing tables for 15 wrappers; also indicating arrangement of conveyors and lights. Fantail packing table is arranged to accommodate three inspector-packers who handle the output of from 12 to 15 wrappers.

DIAGRAM COURTESY STANDARD BRANDS


OPERATORS FACE
3 INSPECTOR PACKERS
CROSS CONVEYOR
PLAN
8 DUPLEX 110 VOLT OUTLETS OVER LIGHTS FOR SEALING UNITS
6 FLUORESC NT
FANTAIL TABLE
CONVEYOR TABLE
ELEVATION OF TABLE OF PRESS
ABOVE CONVEYOR
UPPER BELT – 12" WIDE – 2 PLY CANVAS BELT SPEED AT 12" PER MIN.
LOWER BELT – 8" WIDE – 2 PLY CANVAS BELT SPEED AT 24" PER MIN.
SECTION

Sales booster

A package which can boost sales anywhere from 10% to as high as 10 times over last year's figures in the first four months of its lifetime is news! That is exactly what these envelopes have done for Press-On tapes.

When Press-On was first introduced four years ago it was wound on a card and then wrapped in a cellophane bag. With the disappearance of cellophane the product was simply put on the counter without any protective covering and immediately sales began to fall off alarmingly. Packages and merchandise became soiled, damaged, unsalable and store managers were reluctant to handle it.

More than a year ago it became apparent that something would have to be done about the packaging of these tapes. It was decided that the new package, however, would really have to ring the bell—be perfect!

Much time was consumed in research—even more in designing, and the final result has more than exceeded the highest expectations.

The tapes are now packaged in fully protective envelopes lithographed, each with its own design illustrating specific uses, in full color. The sealed packages keep the tapes clean and undamaged and yet the pictorial treatment takes care of the customer's natural curiosity about the contents.

To add to the point-of-sale appeal of the tapes the company has devised six different counter display racks of varying sizes to fit the needs of the various chain or variety stores. The displays range from a small paperboard box to an elaborate affair of wood which holds several dozen of a complete assortment of the four different tapes.

CREDIT: *Lithography, Lutz & Sheinkman, New York.*

DESIGN HISTORIES

Delicate parts pack

Delicate metal laminations annealed by a carefully controlled process to an exact electrolytic quality and destined for use in airborne radar, radio and other electronic equipment must be so carefully packaged that they are not subject to even the slightest flexing.

The Magnetic Metals Co. of Camden, N. J., found that even the slight gathering of the turn-in at the corners of the conventional tight-wrap box was causing spoilage and lost time in the packing process—to say nothing of the loss in unpacking. A box was designed to provide ease of loading and, particularly, ease of unloading where damage and subsequent customer irritation were occurring quite frequently.

The box is essentially a set-up box with an additional liner for added protection. Two open-ended trays—one deep and one shallow—are nested inside the box and hold the parts. These particular "E"-shaped laminations are known as "Double E" and consist of a short-pronged piece and a long-pronged piece. They are assembled by putting together a long-pronged and a short-pronged "E" and putting a similar layer on top but with the positions of the "E's" reversed. This is continued until the desired thickness of the transformer core is built up.

On the assembly line, each operator is provided with two complete boxes of the parts. A tray of the long and a tray of the short "E's" are placed to her right and a tray of each to her left, the latter trays being reversed. In this way the packaging itself aids in achieving the simplest motion cycle for the assembly operation.

CREDIT: *Box, Walter P. Miller Co., Inc., Philadelphia, Pa.*

Transparent perfume boxes

Pointing the way to postwar cosmetic packaging, the accompanying illustrations show transparent containers made of methyl methacrylate which hold perfume bottles firmly and at the same time show them off to best advantage.

In making this type of package, since the initial cost of the material is fairly high, precise dimensions are of the utmost importance. The pieces are first cut to size allowing $^1/_{16}$ in. for saw-cuts and sanding. Five thicknesses are then glued together with a heavy cement specially compounded for the purpose. After thorough drying, the pieces are polished and may be dyed if desired. There is a quipped section inside the package into which the bottles fit securely so that the container may be tipped at any angle without spilling. The plastic material may be tinted in any color desired.

In the top photo the main body of the container is clear plastic while the base and knobs are ruby-red. Decorative striping is done after the dyeing and polishing are completed. In the lower photo the larger container has a milled-out section in the knob. A satin ribbon is then tied around the outside, made into a bow-knot and the knot is pulled back through the knob thus making a unique and securely tied ribbon fastening. This is just one of the many unusual fastenings which can be worked out.

The designer of these unusual packages found that it was of the utmost importance, when working with acrylic, to work out designs completely and in great detail on the drawing board before attempting to experiment with the actual material. These packages, therefore, represent many hours of labor over the drawing board and answer some of the problems of postwar plastic cosmetic packaging.

CREDIT: *Designs by Austin Suders, Los Angeles, Calif.*

DESIGN HISTORIES

Getting down to cases

A colorful, new, double-duty plastic case, which can be used as a record brush, houses the improved line of Garod Permatone phonograph needles for the Garod Radio Corp., Brooklyn, N. Y.

The case, injection molded of cellulose acetate, comes in three shapes—round, oval and square. The transparent window of methyl methacrylate acts as a show window for the needle which is held firmly in the slotted groove provided for it. The window, itself, is actually the lid of the case and must be removed in order to get at the needle.

The bottom of the case is depressed and fitted with a fairly heavy piece of felt which serves as the record brush. By making the case serve a dual purpose Garod has achieved a merchandising advantage not common in needle merchandising. Usually the box which carries the company identification is discarded as soon as the needle is inserted in the machine. With the addition of the record brush, Garod manages to keep the company name in front of the consumer at all times as a gentle but useful reminder.

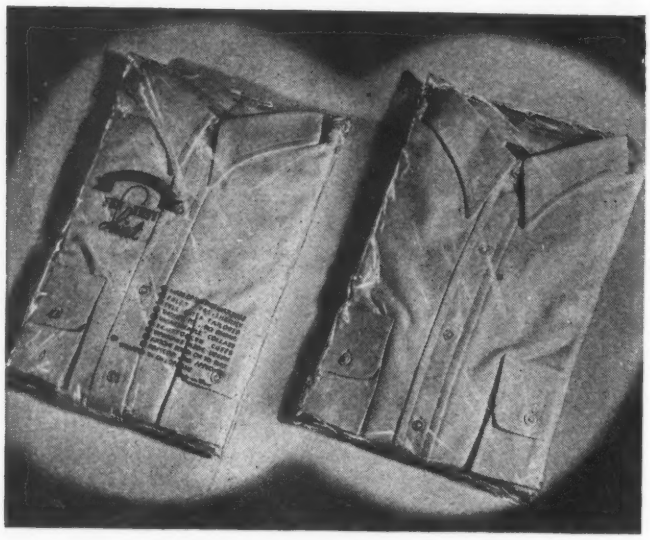
These cases are made in four bright colors and are merchandised by means of four-color, self-service display cards.

Featured in the latest promotion are all three of the improved Permatone needles—"New Standard," "New Superior" and "New De Luxe." A series of scientific durability tests were conducted before these needles were placed on the market and this unusual package was adopted to put across the "high-quality" story of the new products.

CREDIT: *Cellulose acetate, Tennessee Eastman Corp., Kingsport, Tenn. Methyl methacrylate, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. Molding, Waterbury Co.'s., Waterbury, Conn.*

Preference in cellophane . . . a Canada survey

*by Spalding Black**



The ladies want them fresh and they want to see what they are buying—43.4% favored cellophane wraps for shirts.

Less than 1/3 favored cellophane for fruits, vegetables.

Determination of the merchandising, sales promotion and advertising methods and direction likely to prove most effective for any manufacturer of any product during the immediate postwar or "conversion" period is not a simple matter. When the product is a transparent cellulose sheet used as a packaging material and sold largely through converters, the task is even less simple.

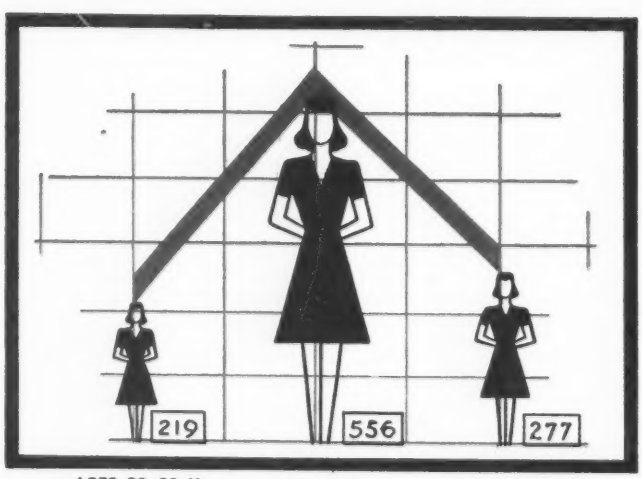
Since 1942 the use of transparent packaging has been denied in Canada to all but foods, edible drugs, cigarette and tobacco lines, and even for these, quotas were much below needs. We were quite sure that cellophane was missed by consumers who had been used to buying many products packaged in it, but we did not know how much it was missed, and by whom, and from what lines of goods.

We had to face the possibility that some goods, formerly transparently packaged, might now (because of wartime buying habits in Canada) be acceptable without it. On other products the value of sanitary, visible packaging might have become more important to the public because of its wartime absence. There was some doubt as to how much of the prewar relationship between quality of goods and packaging remained. Certain wartime merchandising developments, such as the per-pound retailing of fresh fruits and vegetables and the standardization of meat cutting, appeared to offer new merchandising opportunities in which packaging would play an important part, but to what extent we did not know.

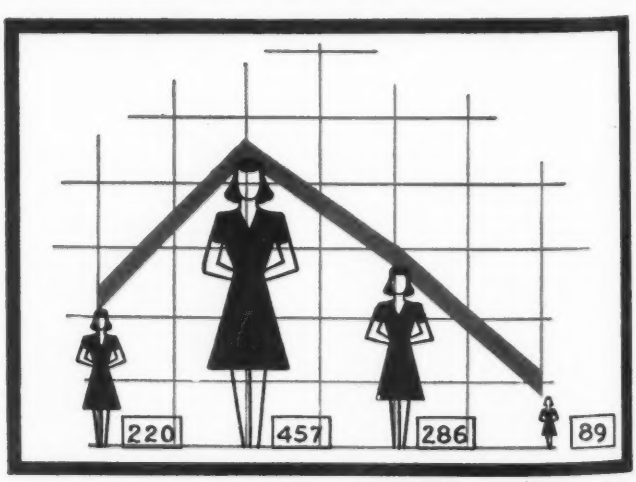
One thing years of experience has taught us: you simply cannot generalize about consumer desires and consumption habits in Canada! One-third of the population, largely living in the Province of Quebec, is French-Canadian and differs from the rest of the Dominion in heritage and outlook as well as in consumption habits. The rest of the population, spread out over a strip about 200 miles wide from coast to coast, embraces a wide range of consumption habits based on tradition, climate and mode of living. Therefore, to make our study worthwhile, we had to know the answers to our questions by areas, just as, were similar questions being asked in the United States, differences might be expected between places such as

* Market Development and Advertising Manager, Cellophane Division, Canadian Industries, Ltd., Montreal, Quebec.

TYPES OF HOUSEWIVES INTERVIEWED



AGES 20-29 Yrs. 30-49 Yrs. 50 Yrs. and Over



Poor Lower Middle Upper Middle Well-to-do

Maine and Texas, and between California and Michigan.

Canadian Facts, Ltd., was the organization called in to conduct the consumer survey by which we hoped to get the answers to our questions. The scientific sample principle, similar to that used in the three big polls which estimate the popular U. S. vote for President, was used. A carefully selected cross-section sample of housewives was picked in 40 cities across the country. In each region, the number of housewives chosen was representative of that region's proportion of the Dominion's total urban families. Within each region, the proper number of housewives was selected in typical cities of all sizes. Within each city, choice was made to assure representation by districts, age groups and incomes.

The total of 1,052 urban housewives was broken down:

By regions	*No.*	*Pct.*
Maritime Provinces	82	7.8
Quebec (French)	279	26.5
Ontario (including Montreal English)	487	46.3
Prairie Provinces	120	11.4
British Columbia	84	8.0
By age		
20–29	219	20.8
30–49	556	52.9
50 and over	277	26.3
By income-social class		
Well-to-do	89	8.5
Upper middle	286	27.2
Lower middle	457	43.4
Poor	220	20.9

Our questions were taken direct to these housewives by interviewers trained in the work and were asked personally, in the home. The questions were:

1. Is it your impression from the things you buy that the use of cellophane has been increased (in Canada) during the war, or cut down?

2. If cut down, what products do you think of that are no longer in cellophane where you particularly miss it?

3. On which of the following products do you think this type of wrapping is a particular advantage and on which do you think it is not? If it is an advantage, what is its main advantage to you on each product?

Cheese	Candy
Meats	Cigarettes
Fish	Sheets and pillow cases
Bread	Ladies' hosiery
Cakes	Lingerie
Buns and cookies	Men's shirts
Vegetables and fruits	Drug products
Frozen foods	

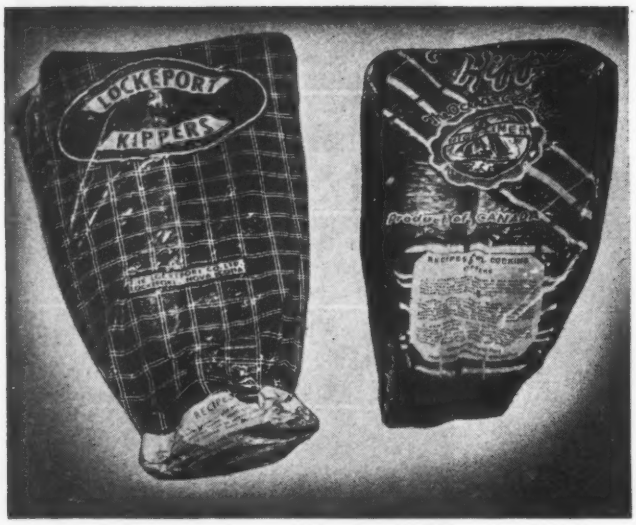
4. Have you ever thought of any product you *never* saw wrapped in cellophane on which you think it would make an improvement? If so, what was the product, and why would this packaging be an advantage.

Of the Canadian housewives interviewed, 54.9% thought the use of our product had been cut down during war years; 16.4% thought its use had been increased; 27.4% didn't know. It was missed most in the Maritimes and least in Ontario and British Columbia. It was missed most by the well-to-do and least by the poor. It was missed most on staple foods (25.1%), baked goods (18.3%), candy and gum (16.1%), hosiery (13.1%), tobacco and cigarettes (10.7%), and miscellaneous wearing apparel (8.7%).

Opinions on the advantage of transparent cellulose packag-

CELLOPHANE WANTED FOR

PRODUCE	Number of MENTION	Chief REASONS
Staple Foods	75	Sanitary Can see what you buy
Baby's Clothing	51	Sanitary
Household Articles	31	General Protection
Clothing	29	General Protection
Knitting, Woolens, etc.	25	General Protection
Forest Articles	22	Sanitary
Cellophane Sheets (for wrapping)	15	Goods more attractive General Protection Sanitary
Perishable Foods—Butter,Lard,Fr.	11	General Protection Sanitary
Magazines, Books, Playing Cards	10	General Protection
Miscellaneous	6	Can see what you buy
Silverware	5	General Protection
Purses	3	Looks more attractive General Protection
Fresh Cut Flowers	3	Looks more attractive
Gifts and Gift Boxes	3	Looks more attractive
Furniture Tops on Display	1	General Protection
Baby Carriage Rain Cover	1	Miscellaneous



Well-to-do housewife seems to favor cellophane on fish. In an over-all summary 44.2% preferred transparent wrap.

Was prewar trend to prepackaged hosiery favored by the customers? 71.6% of Canadian housewives asked said yes.

"It's sanitary" was the reason given most generally by the 88.1% of women preferring cellophane on baked goods.

ing varied considerably by products, by districts, by age groups and by income groups. The following is a summary of the over-all percentages in favor of it for specific products: cakes, buns and cookies, 88.1%; candy, 83.7%; cheese, 81.3%; ladies' hosiery, 71.6%; cigarettes, 65.5%; drug products, 59.9%; meats, 49.9%; sheets and pillow cases, 47.2%; lingerie, 46.8%; fish, 44.2%; men's shirts, 43.4%; bread, 39.4%; vegetables and fruits, 33.1%; quick-frozen food products, 26.2%.

Variations of opinion which may be significant are especially noticeable between districts.

Housewives of the Prairie Provinces have a rather low opinion of the transparent wrap for meats (37.5%) and fish (33.3%), while those in the Maritime Provinces favor it highly (64.6% on fish and 57.3% on meats).

Ontario and British Columbia prefer cellophane on bread while French Quebec and the Prairies show a greater preference for it on cakes, buns and cookies.

French Quebec and British Columbia don't care much about it as a wrap for vegetables and fruits.

Ontario leads in preference for it on frozen foods and French Quebec on cheese.

The Prairies are ahead again in preference for visibly pack-

Almost all the housewives interviewed—81.3%—cited a desire for cellophane wrapping on their cheese cuts. Reasons given for the preference were sanitary protection and greater visibility.

aged candy, sheets, pillow cases, lingerie and ladies' hosiery.

French Quebec is most conscious of the advantage of our product as a wrap for drug products.

In many cases the lower-middle class leads in declaration of preferences for cellophane-wrapped merchandise, but here again there are notable exceptions. The well-to-do favor it on fish, vegetables and fruits, candy, ladies' hosiery, lingerie and drug products. The poor lead in preference for it on bread and cigarettes. The difference in percentages is, however, rarely over 10%. By age groups, the 30–49 housewives led in nearly all cases. Cigarettes, where the younger brides led, was the only exception to this rule.

Although 22% of the housewives interviewed could think of products not now wrapped in transparent film on which they felt it would be an advantage, the suggestions offered were made up wholly of products on which it has already been used. Sanitary reasons, attractive merchandising appearance and general protection were the main reasons for its use.

Here are some of the products mentioned as those on which cellophane would be desirable, with the number of mentions in each case: staple foods, 75; baby's clothing, 51; household articles, 31; clothing, 29; knitted and woollen goods, 25; toilet articles, 22; butter, lard and other perishable foods, 11; books, magazines, playing cards, etc., 10; miscellaneous, 6; silverware, 5; purses, 3; fresh cut flowers, 3; gifts and gift boxes, 3; furniture tops on display, 1; baby carriage rain cover, 1.

If any general lesson may be taken from the findings of the survey, it is that the great middle income group of housewives in Canada, in the 30–49 age range, is best acquainted with cellophane and the best customer of the manufacturers and merchandisers who use it as a wrap.

This group, as others have noted, is in the "age of acquisition" when children are being fed and outfitted, when the home is literally being developed, when income seldom exceeds financial needs—when value is the sole criterion of a purchase. We now know, however, where there is sales promotion work to be done and further profitable custom to be gained by manufacturers, converters and ourselves.

The answers were most encouraging in some cases; rather disappointing in others, but the study was eminently worthwhile in giving guidance in preparing plans for the future.

Must a sheet be fingered to determine its quality? 47.2% said no—they favored visibility packaging (top photo).

Examples of prewar cellophane wraps for lingerie (center), favored by 46.8% of housewives, mainly ruralites.

A majority—59.9%—thought cellophane overwraps on drug products desirable, citing sanitary reasons chiefly.

1 To emphasize the superb quality of its blankets, St. Marys Woolen Mfg. Co. has spent time and thought on their styling. Naturally, the packaging became an integral part of the "quality" story and had to be designed to complement the product it contained. The old box at the right, although it had a certain amount of dignity, did nothing to emphasize the character or describe the blankets it was meant to sell. No merchandising message was put across by the simple statement of fact, "St. Marys . . . Blankets of Character." The new package (left), on the other hand, by using the lamb which has become a tradition with St. Marys, is replete with eye-appeal. The story of the softness of the wool used in the blankets is also emphasized by the association of a lamb with the products. The redesigned package is a set-up box with a reverse silver background on white overprinted with black. This combination of colors and design, along with the typography selected, lends both movement and dignity to this attractive sales-boosting package. Box created and produced by Paper Package Co., Indianapolis, Ind.

2 Rice Bonné, a new 10-minute rice dinner manufactured by Dry-Pack Corp., New York City, utilizes red, white and yellow to catch the eye when on a shelf or in a mass display. The pre-cooked rice is packaged in a heat-sealed glassine envelope inside of which is a smaller envelope containing the dehydrated, powdered sauce. Since the product is unfamiliar to most users a fairly prominent back panel gives specific directions for preparation. Carton, Stecher-Traung Lithograph Corp., Rochester, N. Y.

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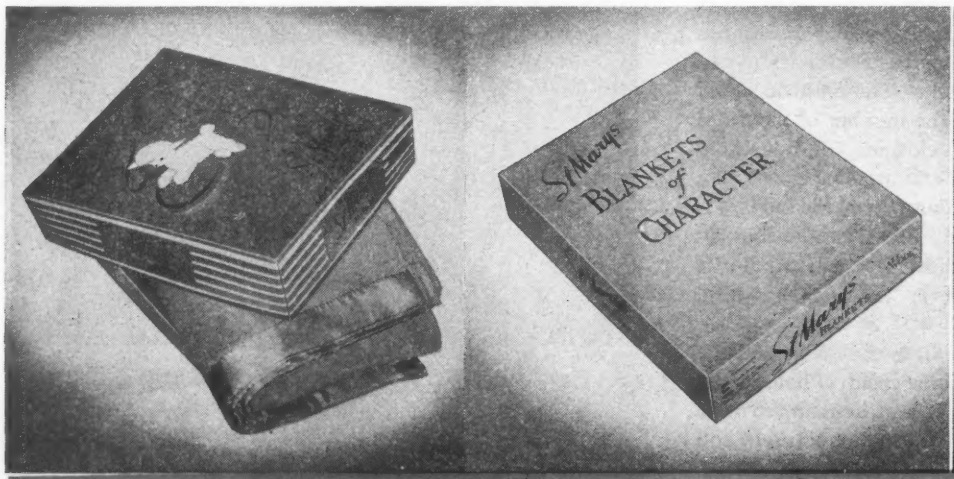

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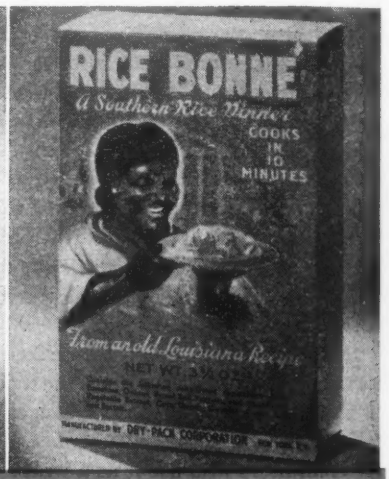

PACKAGING

6

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6 Although both toys and packages are of varied sizes and shapes, this trio of cartons successfully maintains family identity by being almost identical in design and by using the same colors and technique for each. Mespo Products Co. of Milwaukee, Wis., manufacturers of the toys, are justly proud of the way in which the information on each package has been presented—simply and clearly. Line drawings on the top face show the assembled toy with draftsmanlike simplicity while the sides contain a handy gift card with space for the donor's name. As an aid to the clerk in re-ordering, the toy's number and other identification are clearly printed in fairly large type in a prominent place on the carton—but not in such a way as to detract anything from the design. The two colors used, red and black, are letterpressed on a coated lithwhite stock. Packages designed and produced by Milprint, Inc., Milwaukee, Wis.

7 During its introduction it was felt that Chef Boy-Ar-Dee Spaghetti Dinner needed the cut-out carton shown at the left so that the contents could be seen and differentiated from the canned or ready-mixed variety of spaghetti on the market. Now that the buying public is acquainted with the product the company has decided to go to the new carton on the right. The new package has several advantages over the old. It has greatly enhanced shelf- and eye-appeal. It has more firmness and rigidity in mass displays. And, it is easier to handle by both the clerk and the customer. Carton, Container Corp. of America, Philadelphia, Penna. and The Great Lakes Box Co., Cleveland, Ohio.

3 A new carton has been produced for the Lektrolite Flameless Cigarette Lighter made by the Lektrolite Corp. The cut-out top exposes the lighter while hidden under the closed portion is the bottle of fluid which comes in each package. The carton is a brilliant red reverse-printed in white and carries the top-hatted, trade-figure which is the trademark of the flameless lighter. The red of the carton was chosen to contrast pleasingly with the colors of the lighter case. Carton, Robert Gair Co., Inc., New York City.

4 Since adopting this new type of packaging for the "Rush-Eraser" and "Fybrglass Refills," The Eraser Co. of Syracuse reports such rapidly increasing sales that it was necessary to double the factory force. The eraser, in a plastic holder, is carded to a leaflet which is also an instruction booklet. The two refills sell separately in a folder similar to the books for pocket matches. The same style package is being used printed in both Spanish and Portuguese for South American promotion.

5 Since the housewife likes to see what she buys, this new frozen food package has been designed to let her do just that. The foods are placed in a conventional cellophane bag inside the carton and the customer lifts the scored section on the side of the package. Since the paperboard window cannot be completely removed it gives the box structural strength plus visibility. The package takes advantage of transparent packaging while maintaining protection of a carton. Package, Sylvania Industrial Corp., N. Y. C.

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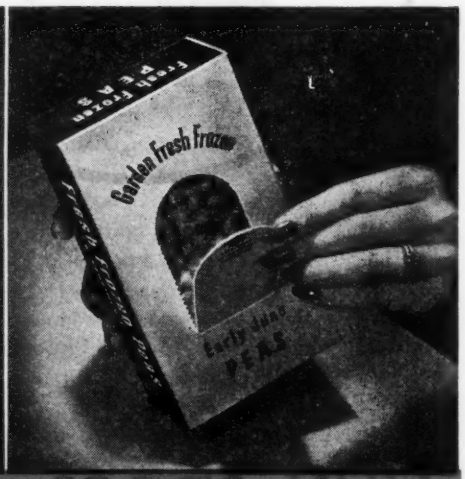

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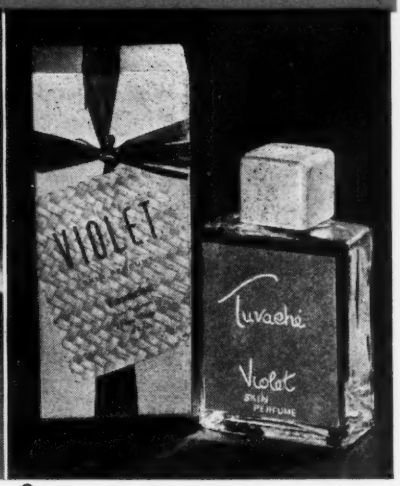
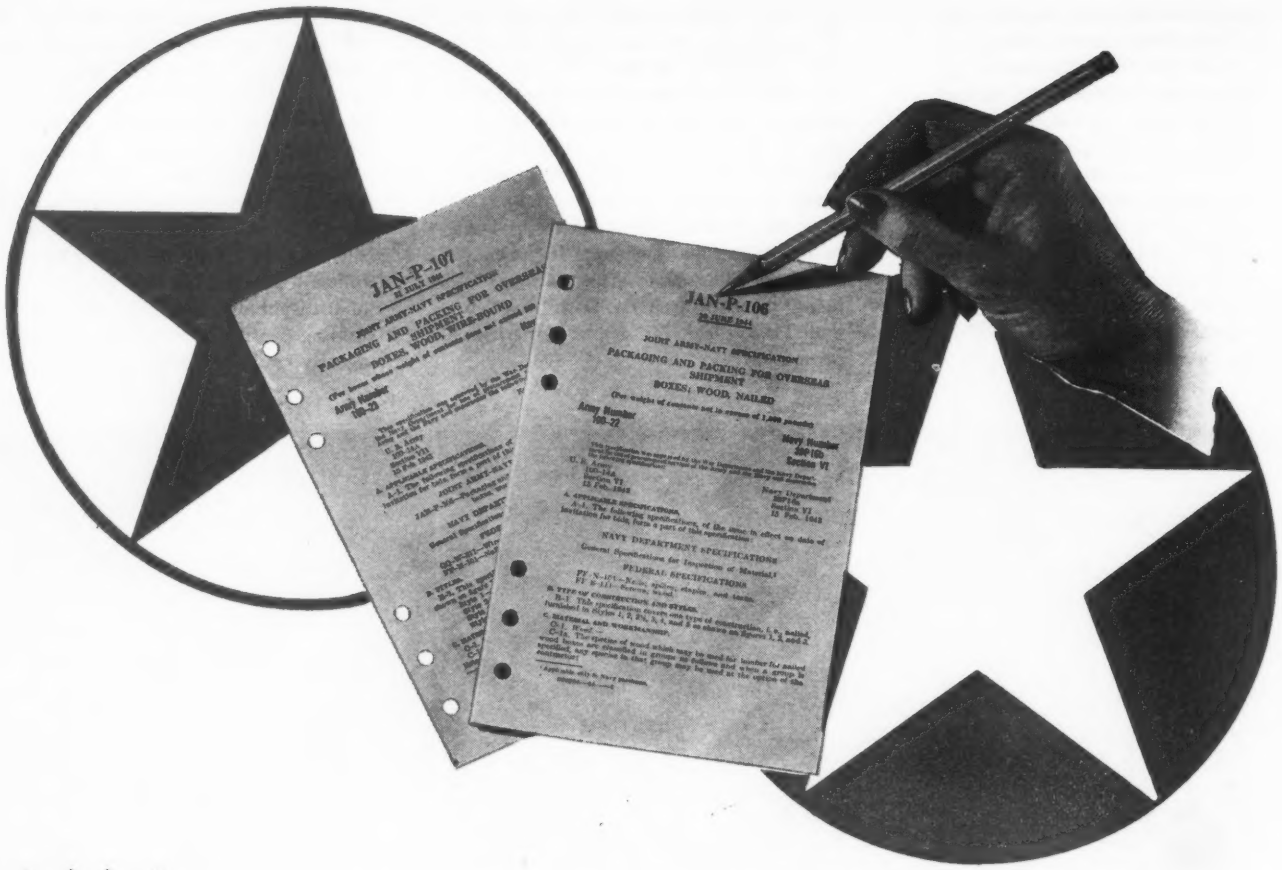


8 For added protection from humidity and insects in the South Pacific area, the Army Exchange Service is now packaging chocolate candy for the boys in one-pound hermetically sealed tin cans similar to the prewar key-opening coffee cans. Four large companies have been commissioned to pack the chocolates—Huyler's, Howard Johnson, Wallace & Co. and Stephen Whitman & Son. Orders have been placed for approximately 6,000,000 cans for this purpose. Problems arising from other packaging materials which absorbed moisture under severe Pacific conditions resulted in the decision to use tin but, unlike other tins going to the Army, these will not be camouflaged. They will, instead, be gaily decorated with designs originated for each of the four companies doing the packaging job. The colorful cans have proved to be a definite morale-builder as they suggest the prewar packages to which the men were accustomed at home and stand out among the olive-drab containers on the shelves. Long lines form outside the PX's when the news gets around that a shipment has arrived. Cans, American Can Co., New York City.

9 A violet-colored, gold-stamped, sueded label and a chunky square ceramic cap add distinction to Tuvaché's newest product—Violet Skin Perfume. The outer folding carton, necessarily of plain paperboard, is dressed up with a raffia tie held in place by sealing wax. Since raffia is used throughout the Tuvaché line, the label for the skin perfume carries the same theme. Cap, Gem Clay Forming Co., Sebring, Ohio. Bottle, Swindell Bros., Baltimore, Md. Raffia, Julius Loewith, Inc., New York City.



JAN specs . . . 1—their evolution and objectives

*by Herbert T. Holbrook**

The first shots of World War II found the packaging industry almost totally unprepared for the great task that lay ahead.

It is hard to realize that at the time of Pearl Harbor there were virtually no text books or manuals to serve as guides for the adequate production of supplies in a global war. Only a handful of government publications on the principles of wood-box and crate containers and a few specifications on domestic-type containers were available to the package designer. The Military Services had to rely almost entirely on the individual knowledge of a small group of men skilled in the art of packaging to provide adequate new standards. Except in those few plants and military spots where these specialists could give guidance, complete reliance had to be placed on men who produced the matériel. There were no suitable specifications to refer to in contracts, no instructions by which the inspector could measure the adequacy of the package. And the vaunted "know-how" of industry—as applied to war packaging—soon proved to be "no-how."

Today we are all familiar with the disastrous effects of packaging "suitable for acceptance by the common carrier at the lowest applicable freight rate," and the thousands of tons of equipment good only for "battle-salvage" long before they even got close to the fighting front.

The first problem to face those assigned responsibility for cutting down these terrible losses was to set up ground rules, to establish adequate and basic standards to guide the package designers. The job was first undertaken under the direction of Army Ordnance, by the U. S. Forest Products Laboratory, who, with assistance from WPB and industry specialists, produced the first history-making rule book, "Introduction to Ordnance Shipping and Storage Charts—Section A," published in the spring of 1942. It was not for another year that "IOSSCa" was revised, brushed up and expanded into the first joint Army-Navy packaging specification and assigned U. S. Army Specification Number 100-14, and U. S. Navy Specification Number 39P16.

Here was an important start. Here for the first time was "packaging" by definition and implication broadened into a general term to include all phases of "protection for shipment

With the flow of matériel now turning full tide toward the Pacific, where the utmost in packaging protection is required, this is a particularly appropriate time to review the new Joint Army-Navy Packaging Specifications. This is Part I of an article which will form a valuable analysis of the development, purposes and postwar place of JAN specs, written by one who has been instrumental in their creation. Part II will appear in our July issue.

* Assistant Chief, Packaging Branch, Office of Chief of Ordnance, War Dept., Washington, D. C.

and storage"—cleaning, preserving, interior wrapping and cartoning, exterior containers, marking and identification, waterproofing and reinforcing—and the basic principles of each defined. Here too was an acceptance of those principles by all branches of the Army and Navy, as well as all other war shipping agencies. Deficient as it was in many respects, 100-14; 39P16 was responsible without question for getting billions of dollars worth of equipment to the using arms in first-class, fighting condition.

The deficiencies of this basic general specification were a question of degree rather than kind. A specification has three fundamental functions to perform: first, it must establish adequate standards of performance; second, it must be enforceable; finally, it must point the way to further improvement in materials or techniques. Applying these criteria to 100-14; 39P16, we find several deficiencies. The standards of performance it established were in many instances inadequate to meet the hazards of wartime shipment and storage, particularly with respect to cleaning, preserving and wrapping. As an instrument of enforcement, the bases for rejection were not defined with sufficient clarity for uniform interpretation by suppliers, procuring agencies or inspectors. As a guide to future development, however—in many respects, the most important of all criteria—the specification performed yeoman service. By integrating all elements of packaging into one document, the importance of each to the other was clearly shown.

The specification also made clear that packaging is a continuous operation governing the protection of the item from the time it leaves the end of the production line until it is finally loaded, blocked, and braced in the freight car.

Finally, it demonstrated that the end-result is a combination of a number of components and that these components could be arranged in an infinite variety of patterns. This specification, in short, for all its deficiencies has made possible an intelligent, scientific approach to the solution of the problem of package utility.

Using 100-14; 39P16 as a starting point, the services agreed about one year ago to pool their laboratory and field data and to prepare a new series of specifications that would provide detailed requirements for all the materials and methods needed to do a complete war-packaging job. They further agreed to publish these specifications, as rapidly as they could be prepared and coordinated, as Joint Army-Navy Specifications which would replace counterpart sections of 100-14; 39P16 and any other Army or Navy specification covering the same material or method.

Twenty-six JAN specifications have now been published in the packaging series, and ten more are at the printer's or in process of coordination. More will be added until all the basic packaging materials and methods have been covered.

While the primary requisite for any JAN packaging specification is of course adequacy for overseas shipment of war supplies, the technicians submit that they will inescapably form the foundation for peacetime packaging. Even the advertising and sales treatment of the final package must wait on the solution of its protection and utility functions. Decoration and painting of a house come only after problems of materials, structure, and size have been resolved. Those who write JAN specifications and those who administer them do not consider their provisions as static and inflexible. In all discussions with industry, the services have stressed the compromise nature of most requirements and have urged the development of improved materials and techniques in industry laboratories. As further encouragement, practically every JAN specification on packaging materials is written on a performance basis, with no holds barred on the kinds of components to be used. Industry has responded whole-

These storage conditions are typical on a beachhead and illustrate the great need for rigid JAN specifications.

PHOTO COURTESY SIGNAL CORPS

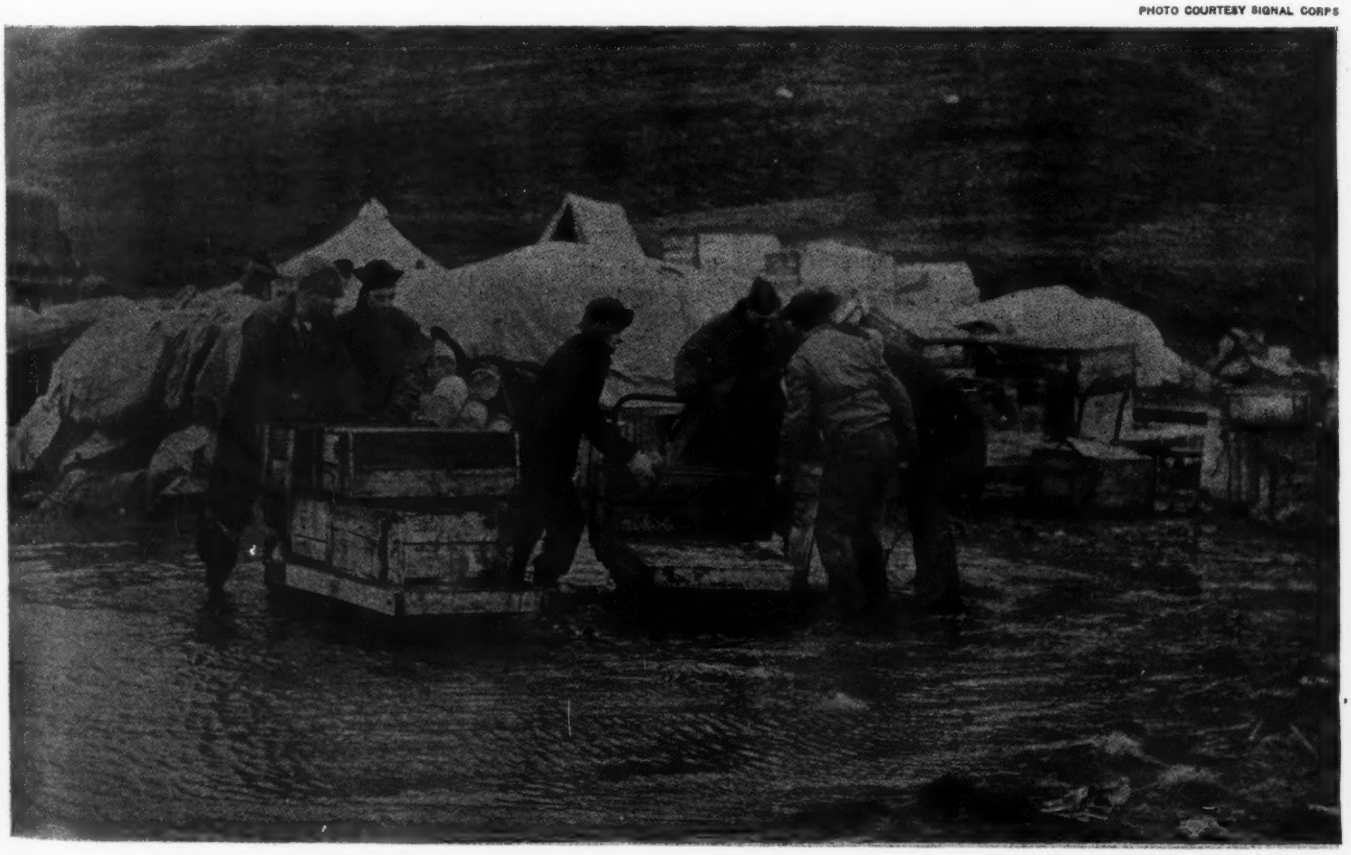
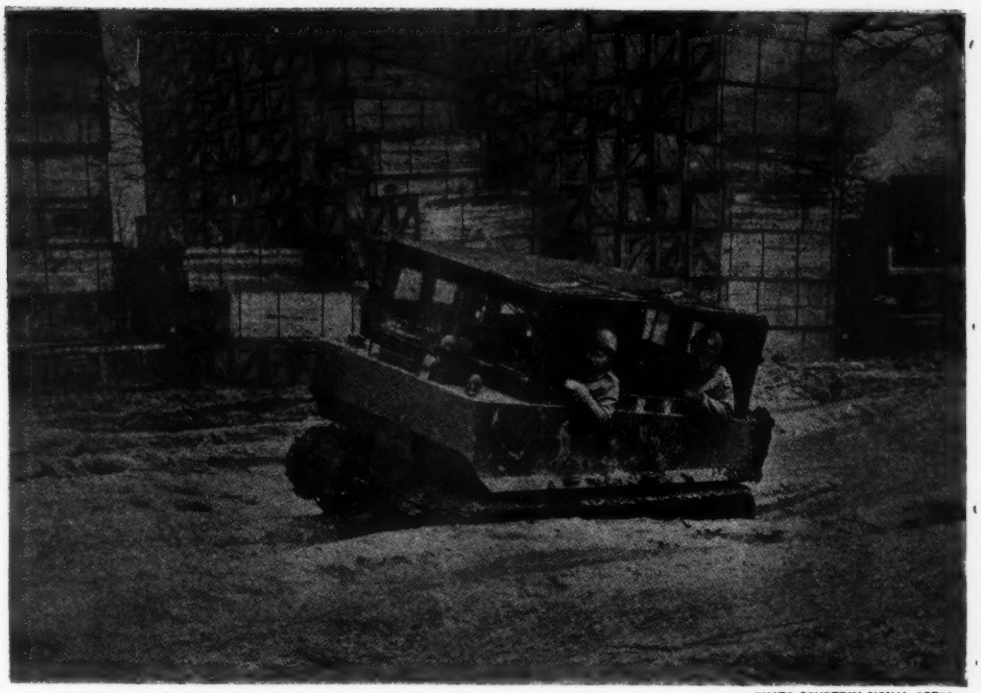


TABLE I—JAN PACKAGING SPECIFICATIONS

Joint Army-Navy Spec. No.	*Army No.*	*Navy No.*	*Title*	*Status as of 15 May*
			Group I—General Methods and Techniques	
JAN-P-100	100-14B	39P16b Sect. O	Army and Navy General Specification for Packaging and Packing for Overseas Shipment	Being coordinated
JAN-P-116	100-49	39P16b Sect. XVI	Preservation, Methods of	Being printed
			Group II—Materials	
JAN-P-101	100-19	52A11	Adhesive, Water-Resistant, for Sealing Fiberboard Boxes	Issued
JAN-P-121	100-15A	39P16b Sect. XXI	Barrier-Material-Greaseproof	Issued
JAN-P-131	100-35	39P16b Sect. XXXI	Barrier-Material, Moisture-Vaporproof, Flexible	Issued
JAN-P-130	100-41	39P16b Sect. XXX	Barrier-Material, Utility, Non-Corrosive	Issued
JAN-P-125	100-37	39P16b Sect. XXV	Barrier-Material-Waterproof	Issued
JAN-P-102	100-38	39P16b Sect. II	Composition, Top Coating Materials, Bituminous	Issued
JAN-P-115	100-34	39P16b Sect. XV	Compound, Sealing, Dip Coating	Issued
JAN-P-	(not assigned)		Compound, Protective, Stripping (Hot Dipping)	Being coordinated
JAN-D-169	100-50	51D19	Desiccants (Activated)	Approved for printing
Jan-P-127	100-39	39P16b Sect. XXVII	Tape, Ahdesive, Pressure-Sensitive, Water-Resistant	Issued
JAN-P-128	100-40	39P16b Sect. XXVIII	Tape, Water-Resistant, Gummed	Issued
			Group III—Containers	
JAN-P-117	(not assigned)		Bags, Interior Packaging	Being coordinated
JAN-P-122	100-28	39P16b Sect. XXII	Barrels, Slack	Issued
JAN-P-108	100-21	39P16b Sect. VIII	Boxes, Fiberboard (V-Board and W-Board) Interior and Exterior	Issued
JAN-P-133	100-26	39P16b Sect. XXXIII	Boxes, Set-Up, Paperboard	Issued
JAN-P-105	100-24	39P16b Sect. V	Boxes, Wood, Cleated, Plywood	Issued
JAN-P-103	100-33	39P16b Sect. III	Boxes, Wood, Cleated, Solid Fiberboard	Issued
JAN-P-106	100-22	39P16b Sect. VI	Boxes, Wood, Nailed	Issued
JAN-P-107	100-23	39P16b Sect. VII	Boxes, Wood, Wirebound	Issued
JAN-P-124	100-32	39P16b Sect. XXIV	Cans and Pails (Metal)	Issued
JAN-P-120	100-27	39P16b Sect. XX	Cartons, Folding, Paperboard	Issued
JAN-P-132	(not assigned)		Crates, Nailed, Unsheathed	Being coordinated
JAN-P-104	(not assigned)		Crates, Sheathed, Nailed Wood	Being coordinated
JAN-P-110	100-30	39P16b Sect. X	Drums, Metal, 55-Gal. (Other than Petroleum Products)	Issued
JAN-P-112	100-25	39P16b Sect. XII	Drums, Plywood	Issued
JAN-D-195	100-44	42D7	Drums, Steel, for Calcium Carbide (100 Pounds Capacity)	Issued
JAN-P-134	100-36	39P16b Sect. XXXIV	Kegs, Slack	Issued
JAN-P-118	100-29	39P16b Sect. XVIII	Sacks, Paper, Shipping, Multiwall	Issued
			Group IV—Procedural Packaging Instructions	
JAN-P-197	(not assigned)		Anti-Friction Bearings and Parts	Being coordinated
JAN-P-208	(not assigned)		Batteries, Storage, Automotive and Navy Portable	Being coordinated
JAN-P-207	(not assigned)		Electrolyte, Storage Battery (in U. S. Gal. or Imperial Gal. Bottles)	Being coordinated
JAN-P-196	100-45	39P23	Engines, Ground Air-Cooled (32 H. P. and under), Spare Parts for	Being printed
JAN-P-4	100-18	39P18	Tires, Tubes and Flaps for Vehicles; General Specifications for	Printed, but being revised
JAN-P-3	100-20	39P17	Valves and Pipe Fittings; General Specifications for	Printed, but being revised



When the mud is so bad that only a "weasel" can negotiate it, what must be expected of the packaged stores?

PHOTO COURTESY SIGNAL CORPS

heartedly. Most manufacturers have been quick to use the specification provisions as a springboard and to go on from there to establish higher levels of performance for their own proprietary products. They welcome, for obvious competitive reasons, the opportunity to use the specification as a standard for comparison, recognizing that their claims for superior performance can now be backed by something more than romancing in the advertising department. It seems safe to assume that this healthy habit will last long after JAN specifications have outrun their wartime usefulness.

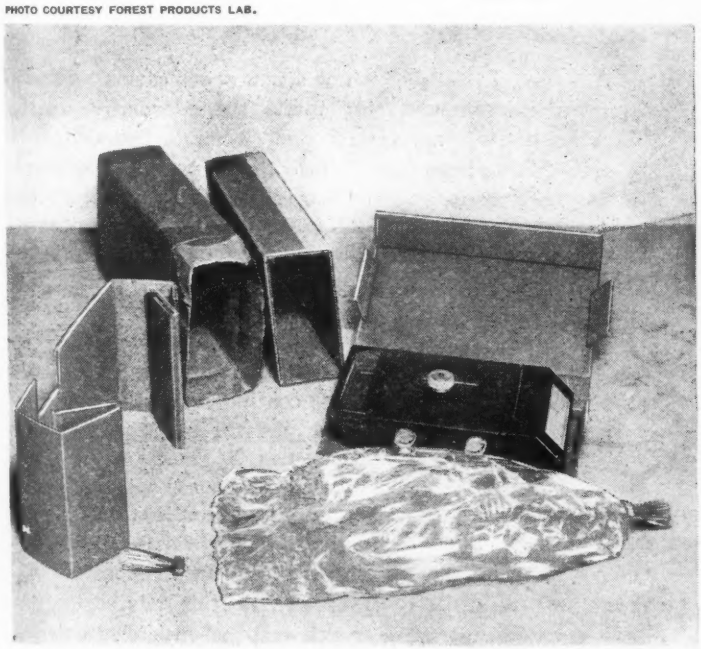
Assuming that the JAN specifications provide a current basis for evaluation of packaging materials and methods upon which can be built future development, it will repay the technician, the engineer and indeed management to examine them carefully. An understanding of their basic principles will bear an important influence on postwar marketing of a broad range of products—a range, in fact, which includes any product susceptible to physical or chemical damage, even under the far less severe conditions of peacetime shipment, storage and distribution.

What follows is an attempt to outline in broad terms the significant provisions of some of the JAN packaging specifications: Table I covers the full range of those in print or under development. To analyze them all is beyond the scope of this paper and the selection is based on an arbitrary estimate of their probable influence on postwar packaging development.

Broadly speaking, JAN packaging specifications fall into four general classifications: (a) those concerned primarily with general methods and techniques; (b) those concerned

Periscope is perfect after I-A cyclic exposure and rough-handling test. Saran bag is grease-, water-, moisture-vaporproof.

PHOTO COURTESY FOREST PRODUCTS LAB.



The proper amount of desiccant for each Method II package is readily determined by JAN formula.

PHOTO COURTESY SIGNAL CORPS

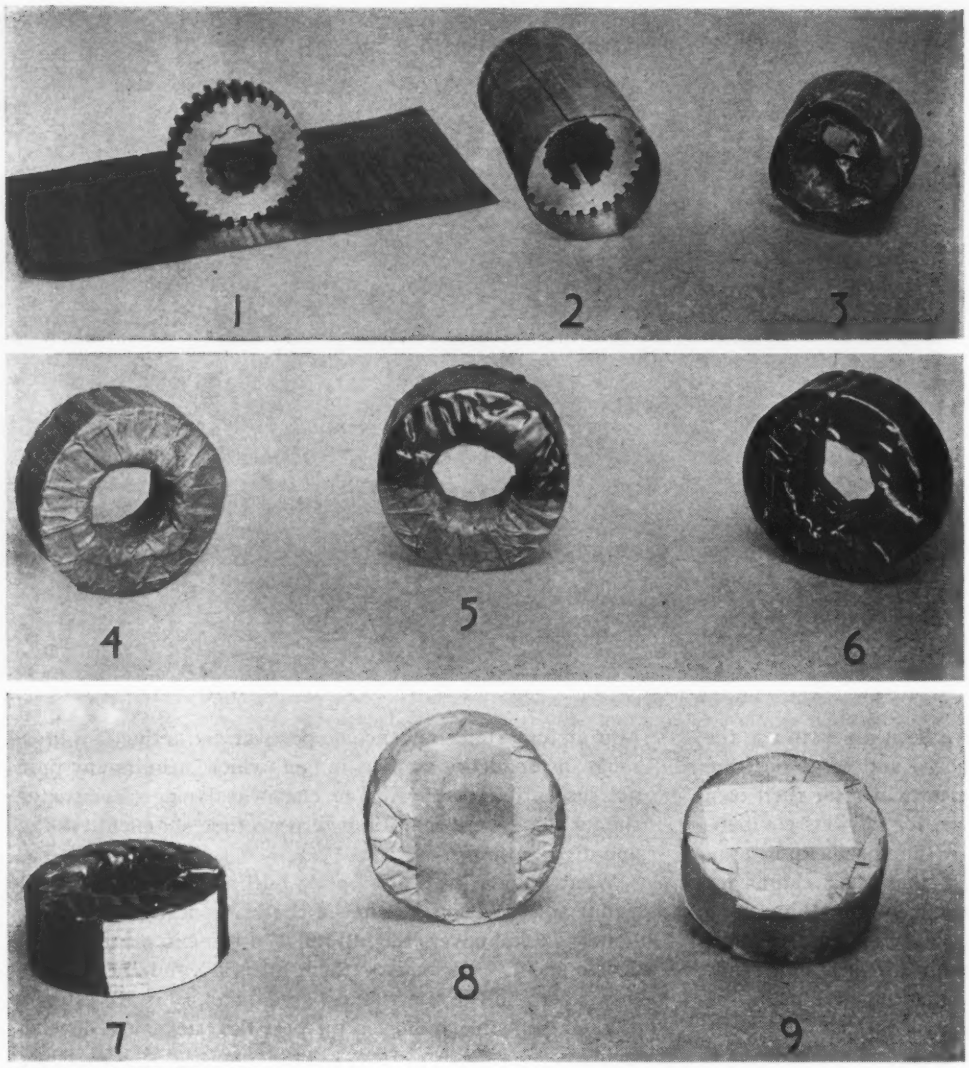


PHOTO COURTESY FOREST PRODUCTS LAB.

These are the nine steps specified for the packaging of a gear in a conforming-wrap type of Method I-A pack. The gear is tightly wrapped with a greaseproof material, double-dip coated, labeled, overwrapped, sealed and then labeled again on the outside.

with materials only; (c) those concerned with materials and their application in a finished container, whether rigid or flexible and (d) those which apply methods and materials to a specific class of equipment or supplies.

In the first group are included JAN-P-100 and JAN-P-116.

JAN-P-100 (General Specification for Packaging and Packing for Overseas Shipment) is in effect an introduction to the more detailed specifications. In a relatively few pages, it brings the detailed specifications into their proper focus and relates them, one to the other. In broad terms it defines the general requirements for a completed package and sets the limitation of application for interior and exterior containers by weight, size and type of load. In this respect, it replaces 100-14; 39P16, but unlike that general specification, it merely references the applicable JAN material or container specifications without describing their detailed requirements. In addition, it contains descriptions and limitations of application for various materials and types of containers which are not considered suitable for detailed JAN specification treatment, or for which sufficient test data are lacking. Cushioning materials, for example, have intrigued the laboratories since the beginning of the war, but to date no generally accepted tests have been developed to indicate the performance that can be expected. JAN-P-100 will serve industry well as a convenient "check-chart" and will probably become the introductory textbook for postwar training courses in packaging.

JAN-P-116 (Preservation, Methods of) warrants a complete story in itself. In many respects it is the most important of all the JAN series, for of all problems of packaging that of preservation was the least understood at the start of the war. By the same token, it will probably have the greatest influence of any JAN specification on postwar packaging, since protection against corrosion is a problem that must be considered on any item which is made in whole or in part of metal.

Actually, JAN-P-116 is not a new specification. It owes most of its contents, particularly the informative matter included in the appendices, to the "Ordnance Instructions on Cleaning and Preservation" issued in January 1943, which in turn was the basis for Army Service Forces Technical Manual 38-305, ASF Manual M-406 and Army-Navy Aeronautical Specification AN-P-13. The new specification does, however, bring these earlier publications up to date. The package designer is now provided, for example, with no less than twelve different techniques to accomplish a Method I-a package. Previously he has been generally limited to three: the conforming wrap and dip-coating seal; the container overwrap and dip-coating seal, and the greaseproof, waterproof bag. Now consideration can be given to nine other techniques, such as sealed waterproof paper wraps, rigid metal or plastic containers and waterproof-coated cartons.

With respect to Method II packages, JAN-P-116 provides correlation with the four classes of moisture-vaporproof barriers defined in JAN-P-131: i.e., floating bag, container-barrier-container, container overwrap and cushioned-item bag

and correlation also with JAN-D-169 (Desiccants), by establishing the formula for the quantity of each grade of desiccant to be used with each type of barrier. The use under controlled conditions of rigid metal containers is provided for, again with the correct desiccant formula.

The rough-handling and cyclic exposure test is retained as the basic measure for evaluating the performance of Method I-a and II packages, for the good and substantial reason that no other test has proved to give so satisfactory a correlation between laboratory tests and actual field performance.

In this test Method I-a and II packages are first subjected to a quick leak test by immersing them under a one-inch head of water and observing for air bubbles while the packages are slowly rotated. If no leaks are noted, they are then inclosed in an unlined shipping container and dropped or tumbled in a revolving drum. The containers are then exposed to varying temperatures and humidity conditions during an eight-day cycle. The cycle covers a range from plus 130 deg. F. to minus 10 deg. F., with intermediate conditioning at 70 to 90 deg. F. and at 35 to 50 deg. F. At regular intervals in the latter half of the cycle the containers are subjected to simulated rainfall for two hours. At the end of the eight-day period, the packages are opened and the contents carefully examined.

Any evidence of wet or soggy material within packages is considered cause for rejection. Thus in a short period some approximation can be made of the ability of the package to withstand normal wartime shipping conditions. Admittedly all conditions are not reproduced and often packages are subjected to higher and lower temperatures and often too they are immersed for longer periods than called for in the quick leak test. Nevertheless, all overseas observers have reported Method I-a and II packages made in conformance to JAN-P-116 and its predecessors have performed brilliantly in every theater of the war and that they have fully met the demands of the services.

In the second group—those specifications concerned with materials only—greater exactness of definition and more rigid standards of control are required than can be applied to methods and techniques. For these are specifications primarily designed for procurement and more exactly for direct Government procurement. When the Government procures, acceptance becomes purely a question of, "Does the material meet the specification—or doesn't it?"

There are—it will be noted from the table—some nine JAN packaging material specifications already issued, with more on the way. It is somewhat startling to realize that of this whole group only two—pressure-sensitive tape and waterproof paper—had preceding specifications issued before the war—and even the resemblance of JAN-P-125 to their forerunners is almost pure coincidence. Today, "greaseproof wraps" "waterproof papers," "silica gel" and "moisture-vapor-barriers" are familiar terms throughout industry and the dollar value of last year's production for war packaging of these four alone was more than $100,000,000.

Only those materials which are of basic importance across the board in wartime packaging have been selected for inclusion in the JAN series. All are interdependent: The desiccant specification is meaningless without the moisture-vaporproof barrier specification; dip-coating compound is required for Method I-a packaging with Grade C greaseproof barrier materials; top-coating materials must be protected by reinforced waterproof (*Continued on page 174*)

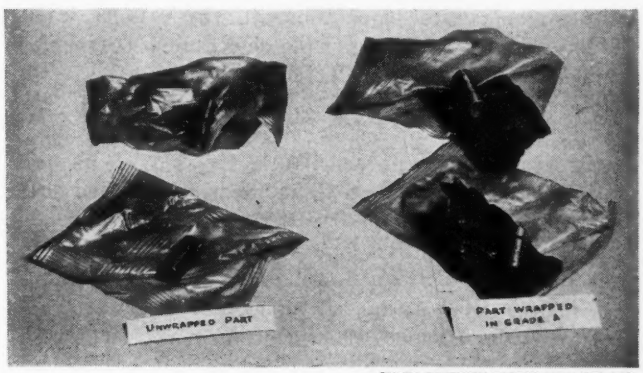


PHOTO COURTESY FOREST PRODUCTS LAB.

Grease- and waterproof bags failed 8-day Method 1-A test. Water resistance of polyvinyl chloride film was low.

This kind of handling, typical of all overseas operations, puts maximum strains and stresses on containers.

Handling orders . . . *little ideas are big helps*

The packaging job does not end with the filling and sealing operation. Efficient handling of stock and filling of customer's orders, whether it be in the manufacturer's plant or a wholesaler's warehouse, is a vital step in getting merchandise to the retailer's shelves where it can do the selling job for which the package was intended.

Wartime labor shortages often have dictated a re-examination of shipping- and stock-room practices to determine where a few more corners can be cut to conserve manpower and speed up operations. Simple ideas that have proved big time-savers could well afford to be adopted more widely.

The Bureau of Manpower Utilization of the War Manpower Commission has been very effective in disseminating such information. Its "Case History Reports" on manpower-saving devices, issued periodically, contain many hints for the manufacturers and wholesalers of packaged products.

One recent report covered the wholesale drug industry, and was prepared in collaboration with the National Wholesale Druggists Assn. Some of the devices reported on there are illustrated and described herewith.

For the last two years, I. L. Lyons & Co., Ltd., New Orleans, has saved time and avoided errors in shipment simply by using pre-printed labels for 800 of its most active accounts. The labels are inexpensively printed in the company's own multigraph department.

Key to this system is a large rack in the packing department subdivided into small shelves with space allotted for 800 different labels, arranged alphabetically. A stack of labels for each customer is kept constantly in place, the size of the stack depending upon the activity of the account. This was arrived at by determining, for each of the 800 customers, the average number of shipments per month and the number of cases in each. Thus, it was possible to tell whether 100 or 500 labels should be printed up at a time.

The Lyons company has timed its packers with a stop watch, and found that with the prepared labels a carton was addressed and sent on its way in three seconds flat; the previous method of writing the address on the carton with a crayon took from 25 to 30 seconds. Not only is the time saved considerable in a day's work, but misshipments due to illegible or erroneous writing are eliminated and the customer is pleased to find that the wholesaler considers him important enough to have labels printed with his name.

A second cabinet of labels is maintained in the warehouse to use in shipping original packages.

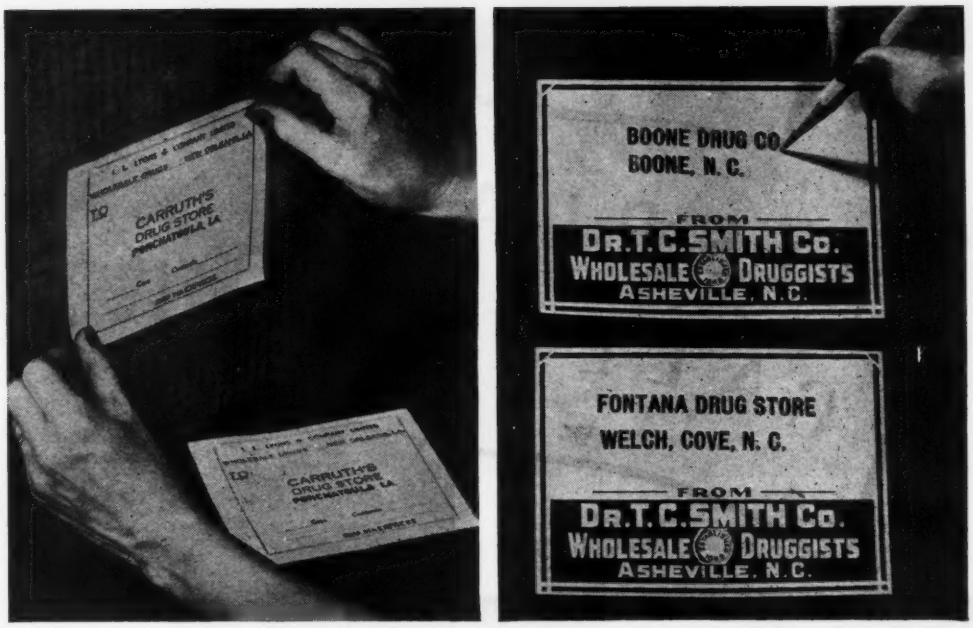
The Dr. T. C. Smith Co., Asheville, N. C., has a little different solution to the same problem. The Smith company has found it practical to have a rubber stamp made up with the name and address of each active account. The stamps, which cost about 50 cents each when ordered in lots of 100 or more, are kept in a rack in the shipping department and used to stamp a blank shipping label just before it is glued to the carton.

This company had previously stenciled addresses on shipping cartons, but this became impractical with the use of second-hand cartons, which were often badly marked up or defaced by previous use. Rubber-stamp lettering of labels, using block letters at least $1/4$ in. high, proved to be the answer. Size of the type makes for easy legibility.

Several companies report the use of wheeled, portable equipment to supplement fixed installations and facilitate loading, unloading, conveying and handling of packages. This is perhaps the outstanding trend evidenced by the various reports.

Pre-printed labels for 800 I. L. Lyons customers are kept alphabetically in shipping room rack.

Pre-printed label is slapped on (left) in $1/10$ the time it takes to write an address with crayon (right), the previous method used.



Close-up of Lyons label (left) which is mimeograph printed. A Rubber-stamped address (right) used by Dr. T. C. Smith Co., is also a time and error saver. Letters are 1/4 in. high.

The Alexander Drug Co., Oklahoma City, has devised a roller carriage, upon which mixed shipments from a manufacturer are checked as they are opened by the receiving clerk at the rear end of the order floor. Transferred directly from the manufacturer's shipping case to the roller carriage—or to more than one carriage if necessary—the merchandise is pushed around to the stock shelves where it belongs and unloaded, ready for the order clerks.

This system has eliminated several extra handlings, required formerly when the merchandise was unpacked onto a table, then transferred to a truck, pushed around to another table for sorting and finally put on the shelf for the order clerk.

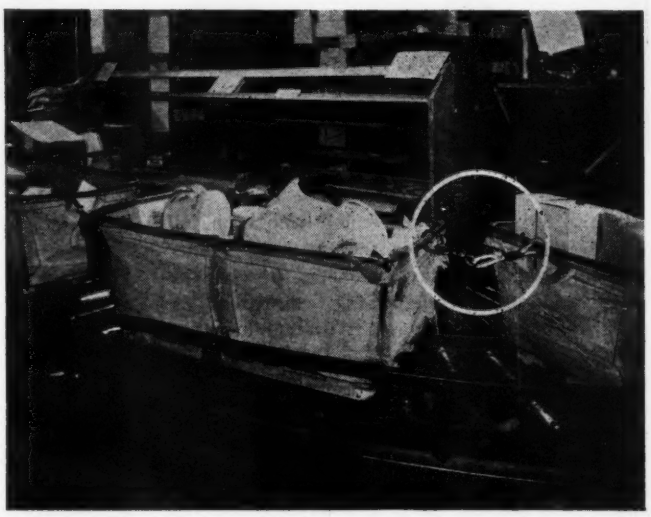
The Alexander company has another prize idea which is simplicity itself.

For filling assorted orders, the company uses large baskets of canvas on a metal frame, mounted on wood skids and sent to the packing department on a conveyor line. Where more than one basket was needed for a single order, there was the problem of keeping the baskets together on the conveyor line. The company solved this by hooking together baskets which belonged together, using a very simple coupling device.

An 8-in. cotton rope is attached in the form of a loop to one end of each basket, with a metal halter ring catch at the end of the rope. The opposite end of the basket has a 2-in. metal ring attached through the handle hold. It is thus an easy matter to hook any number of baskets together by fastening the catch on the end of the rope of the front basket to the metal ring of the basket following. It has been found very effective in cutting down the number of basket tickets required and the misplacement of the basket itself from the order to which it belongs.

The same company has a double checking arrangement which is said to have eliminated many claims for shortage and other errors. This arrangement merely consists of having double checkers stationed at various points on the conveyor system, so that as the basket leaves one checker it is ready for the next, and when it reaches the end of the line it is ready to be packed. Formerly checkers were stationed at the end of the line and there was a delay there. The system has been found especially helpful at the present time, when experienced checkers can help inexperienced order clerks in filling orders in any of the (*Continued on page 168*)

Roller-carriage at Alexander Drug Co. sorts incoming merchandise as it is unpacked, conveys it to shelves.



Simple coupling device (circled) keeps order baskets together on conveyor line and minimizes mixed-up orders.

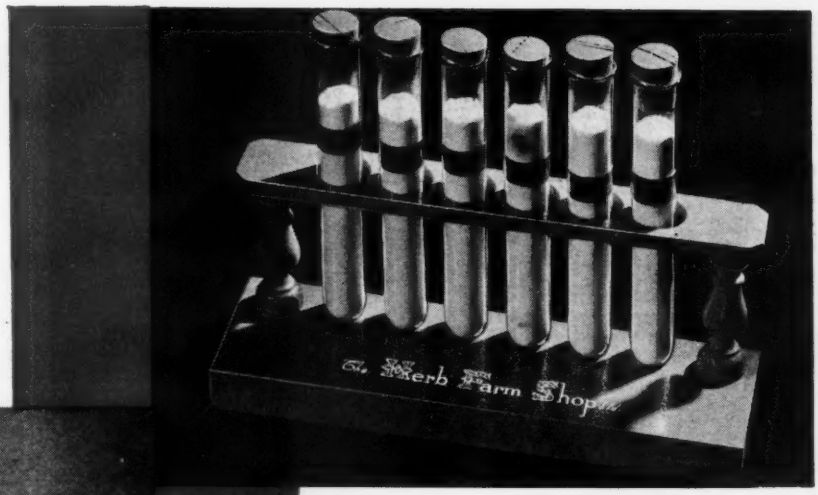
DISPLAY GALLERY

Above: A beautiful eight-color lithograph job has been turned out for the latest Le Sonier window or floor display which ties in with the early summer merchandising campaigns in drug and department stores. Although intended mainly to promote the sales of the powder mitt for which this company is well known, it also calls attention to some of the other specialties such as the shower cap and the sachets. It is so designed that it makes an attractive background for actual packages of Le Sonier products either in a window or on a counter inside the store. Display created by Hussey-Woodward, Inc., New York.

Above: The new giant-sized Seaforth jug, latest addition to the Alfred D. McKelvy Co.'s line is being shown off by the company's now-familiar "Little General." This popular trade figure is serving in the capacity of ambassador-of-goodwill as a counter display and his counterpart is proving to be an eye-catcher in national advertisements. Made of ceramic plaster he stands about 12½ in. high—just high enough to sell Seaforth products effectively.

Below: A double-sized, "over-the-wire" hanger promotes Ivory Salt to help boom the retail sales of spring vegetables. The picture is a reproduction of an oil painting 1½ by 3 ft. which appetizingly portrays radishes and onions in their true colors in contrast with the bright orange carton. Markets and grocery stores are being urged to hang these displays near or over the fresh fruit and vegetable counters.

Right: A mere shortage of display materials wasn't going to stop The Herb Farm Shop from promoting its powder shades by means of a counter powder tester. This chemist's rack was simply converted into a tester with the addition of a little paint and a few labels. The wooden rack was painted a soft blue as were the cork closures. A gold and blue label tells the customer the shade names of the powders on display and when left on the counter this rack also allows her to test the various shades on her skin. Rack, Armstrong Cork Co., Lancaster, Pa.

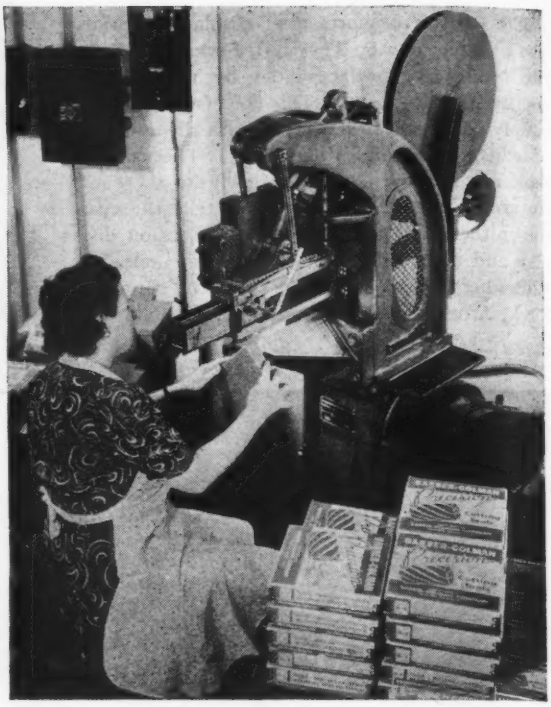


Left: Holeproof Hosiery Co. of Milwaukee is using this series of display cards which were designed to solve a threefold merchandising problem: to insure representation in the finer stores, to emphasize hosiery colors and to provide a versatile unit adaptable to both window decorations and counter display. All three requisites were filled by creating color moods for the individual hosiery shades through the use of loose, softly shaded fashion drawings. Display, Milprint, Inc., Milwaukee, Wis.

Right: Fair Trade Merchandising, New York City, suggested a very successful promotion to the 1300 stores it serves for a number of essential year-round men's toiletry items, packaged in a shipping carton as a gift box at a time when few or no gifts were available. A counter card which fits into the box itself lists the items in the package and shows the considerable saving to the consumer. Little easel-mounted side cards add to the eye-appeal. A label is provided with the kit so that mailing to service men can be taken care of on the spot.

Left: The new Num-Zit teething lotion display for the American Druggists Syndicate is at one and the same time a shipper, a dispenser and a display unit. Each card contains four bottles of the lotion and four cards constitute one unit when the product is shipped to the druggist. The druggist merely takes the already set up card out of the container and puts it on his counter. He does not have to handle either the display card or the merchandise. The display was really planned as a self-service unit because the mother can pick up the bottle right from the card, hand it to the druggist for wrapping and the sale is made. Display, United Lithographing Corp., New York.

Representative group of special packages designed for Barber-Colman cutting tools to give maximum merchandising value, protection in shipment, ease of handling. Does not show inner protective wrap.



The boxes are stored flat and are then made up in the stock room on this special staying machine as they are needed for packing the tools.

Precision tools in precision packages

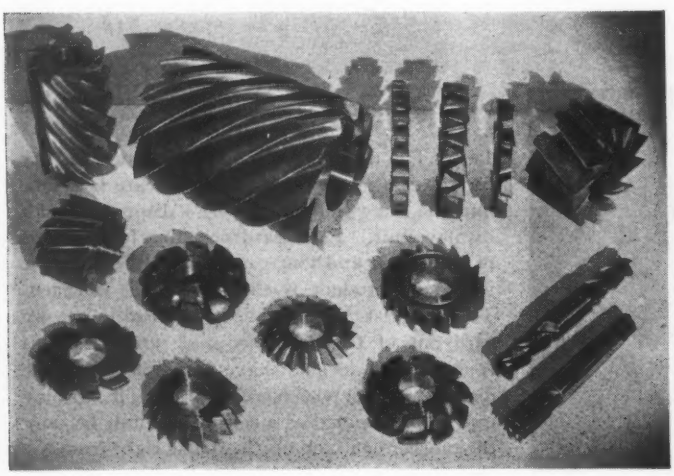
Cutting tools are always valuable instruments, worthy of the utmost in packaging protection; in war time, they are worth their weight in gold.

Cutting tool manufacturers as a group have done a superb job in meeting the "impossible" demands of a fighting America. You don't hear much about the work this industry is doing, but without the highly specialized cutting tool industry, this country would be far less superior to its enemies.

The tremendously expanded operations required to supply these cutting tools gave rise to complex engineering problems. Overcoming such obstacles required the mustering of the initiative, experience and brain-power of the cutting tool industry's best minds.

As a result of these conditions, cutting tools have been hard to get—hard to get in sufficient quantity and hard to get in time. Consequently, it has been paramount that every cutting tool user get the most out of his cutting tools.

The Barber-Colman Co., Rockford, Ill., wanted double assurance in shipping these tools that they would arrive safely and in good condition. There were other problems also that



This photo shows the nature of the various fine cutting surfaces which must be protected by the packaging.

Boxes are stored in stock room or tool crib either closed or with lid inverted; a side panel is printed inverted.

needed simplifying through proper packaging and these were the shortage of storage facilities, lack of standardization of sizes ordered and shipped and the need for quick, easy identification and handling in view of the manpower shortage.

High-speed steel hardened and precision-ground cutting edges also needed protection from corrosion and physical damage to insure proper operation of the tool upon its arrival.

These problems were placed in the hands of packaging engineers and with their complete cooperation a package design was worked out which successfully solved these problems.

A fibreboard type of telescope box was chosen because of its durability and strength. A survey was made of various sizes and shapes shipped daily and it was found that a range of 16 sizes would satisfy the majority of cases.

Each package had to be oilproof, plainly marked and adapted to ease in handling. The box chosen served this purpose well, because it was delivered flat, stored and then made up in required sizes as needed. The boxes were treated with a lustrous resinous surface to make them greaseproof and to protect the printed surface.

Trial shipments of cutters were made to the East and West Coasts to determine the effects of handling on the precision tools shipped in these boxes. By request, these shipments were unopened at destination and returned in the original package. Inspection after this handling showed no evidence of damage during the 3,000-mile trip under adverse conditions.

Finally, these boxes provided an attractive package, a credit to the Barber-Colman name among cutting tool manufacturers and an indication of the company's effort to contribute to the drive for final victory.

Appearance has a very practical merchandising value in packages for industrial products of this type. The Barber-Colman people state that they have found through experience that when a tool arrives in a customer's plant in a sturdy, attractive, informatively labeled package, that package is seldom discarded but is kept as a permanent storage container for the tool. Thus the manufacturer's name is kept constantly before the user throughout the life of the tool.

To facilitate tool-crib storage and encourage retention of the branded container, the Barber-Colman package is carefully labeled on two side panels of the lid with precise identification of the tool within—type, size, etc. One of these panels is printed "upside-down," so that if the tool crib attendant finds it handier to store the tool with the lid inverted and the box open, he still may have an identification panel which he can read without standing on his head.

In the Barber-Colman small tool stock room, the cutting tools are carefully inspected, dipped in a petroleum-type coating material and wrapped in waxed paper before being boxed. Boxes are stored flat and made up as required on a special machine which gives metal reinforcement to the corners.

Completely packaged and ready to ship, the tools are stored on shelves where they are readily accessible and may be instantly identified by the order clerk.

CREDIT: *Boxes by National Metal Edge Box Co., Philadelphia.*

Points and wheels

The problem of packaging abrasive mounted points and wheels, which are very valuable industrial tools subject to chipping and breaking unless well protected, has been solved by A. P. de Sanno & Son, Inc., Phoenixville, Pa., with a simple package which, because of its appearance and efficiency, acts as a silent salesman.

The points and wheels come in a wide variety of shapes and sizes, ranging from $1/8$ in. diameter by $1/8$ in. length to 2 by 3 in. However, the biggest volume is in points ranging up to $3/4$ in. diameter. By careful planning, it has been possible to standardize the great majority of shipments in five sizes of telescoped, fibreboard boxes which are identical in design and construction. The effective use of the trade name "Radiac" and the family resemblance achieved are shown here.

The boxes are of a patented construction which allows them to be stored flat and quickly assembled as needed with metal stays at the corners. The box material is white all-kraft, non-tarnish, super-fibreboard, with a .030-in. lustrous resinous coating which protects the printing, done in two shades of blue.

Boxes previously used were a plain white rag pulp with no branding other than a label pasted on one end. These not only were drab in appearance, but they sometimes failed to protect the products in shipment and were the subject of complaints from customers, distributors and salesmen.

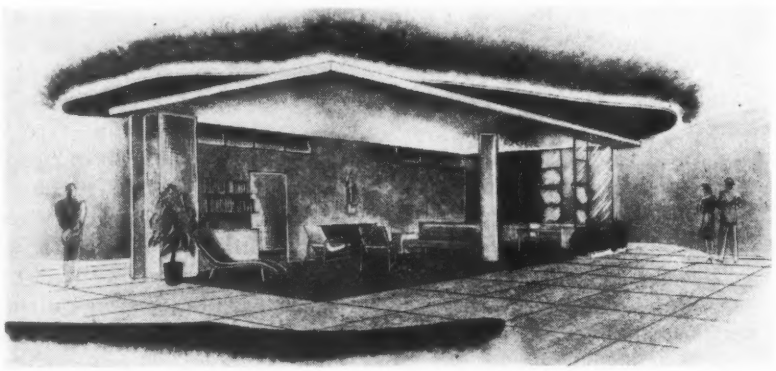
The new boxes are lined on four sides, top and bottom with a cushioning filler; the filler is also used between layers of points to prevent shifting, chipping and breaking. Points are staggered for ease of handling—both in packing and ultimate unpacking. Transparent cellulose adhesive tape is used to seal the two halves of the box together, retaining full legibility on side panels.

The de Sanno company summarizes the advantages of its new package as follows: flats require less room for storage; label-pasting operation is eliminated; greater strength, durability and shipability; increased prestige in strong color combination and design; insurance against "spill-out"; assurance of customer good will; constant point-of-use advertising features; utility features for re-use as container for small parts.

CREDITS: *Box, National Metal Edge Box Co., Philadelphia; filler, "Kimpak," Kimberly-Clark Corp., Neenah, Wis.; tape, International Plastics Corp., Morristown, N. J.*

PACKAGING AFTER THE WAR

A SPECIAL EXHIBIT



An important exhibit called "A Preview of Tomorrow" has been announced by Macy's department store. This exhibit, which will be an over-all consumer-eye view of postwar products, is scheduled to be on display in Macy's starting September 4, 1945.

One entire section of "A Preview of Tomorrow" will be devoted to the subject of packaging. MODERN PACKAGING magazine has been asked to plan and to gather material for this section.

Already, several important packaging developments are scheduled for display. MODERN PACKAGING magazine makes this announcement to inform all packagers of the possibility of exhibiting.

Material should be confined to really new developments—things that will be exciting to the consumer. This is not a trade show and the dramatic aspect of packaging is the one to interest the average consumer.

Wherever possible, motion displays are preferable. Where motion is not possible, demonstrations or dramatic constructions are suggested. Actual packages will be displayed—but only those packages which are really new and different.

According to present plans, Macy's will supply suitable backgrounds for the displays and will take an active part in cooperation with MODERN PACKAGING in the production details of the packaging section. All packagers, material suppliers and machinery manufacturers are urged to cooperate by sending in suggestions and outlines of material that they wish to be displayed.

Because of limited space, MODERN PACKAGING reserves the right to accept or reject any suggestions which do not fit in with the Macy project.

It is expected that this exhibit will have an active life of approximately two years. Present plans are to maintain the show for one month at R. H. Macy & Co. and then to send it on tour to appear in a selected group of department stores throughout the country. The September 4 date scheduled for the opening is not entirely definite. The show has been postponed once, voluntarily, in order to cooperate with Government requests. It is hoped that there will be no subsequent postponements of this highly important educational exhibit.

Further details will be announced as progress is made. Meanwhile, an open invitation is extended to all packagers, material suppliers and machinery manufacturers to participate in this exhibit. Mail should be addressed to:

Walter S. Ross, Modern Packaging Magazine
122 East 42nd St., New York 17, N. Y.

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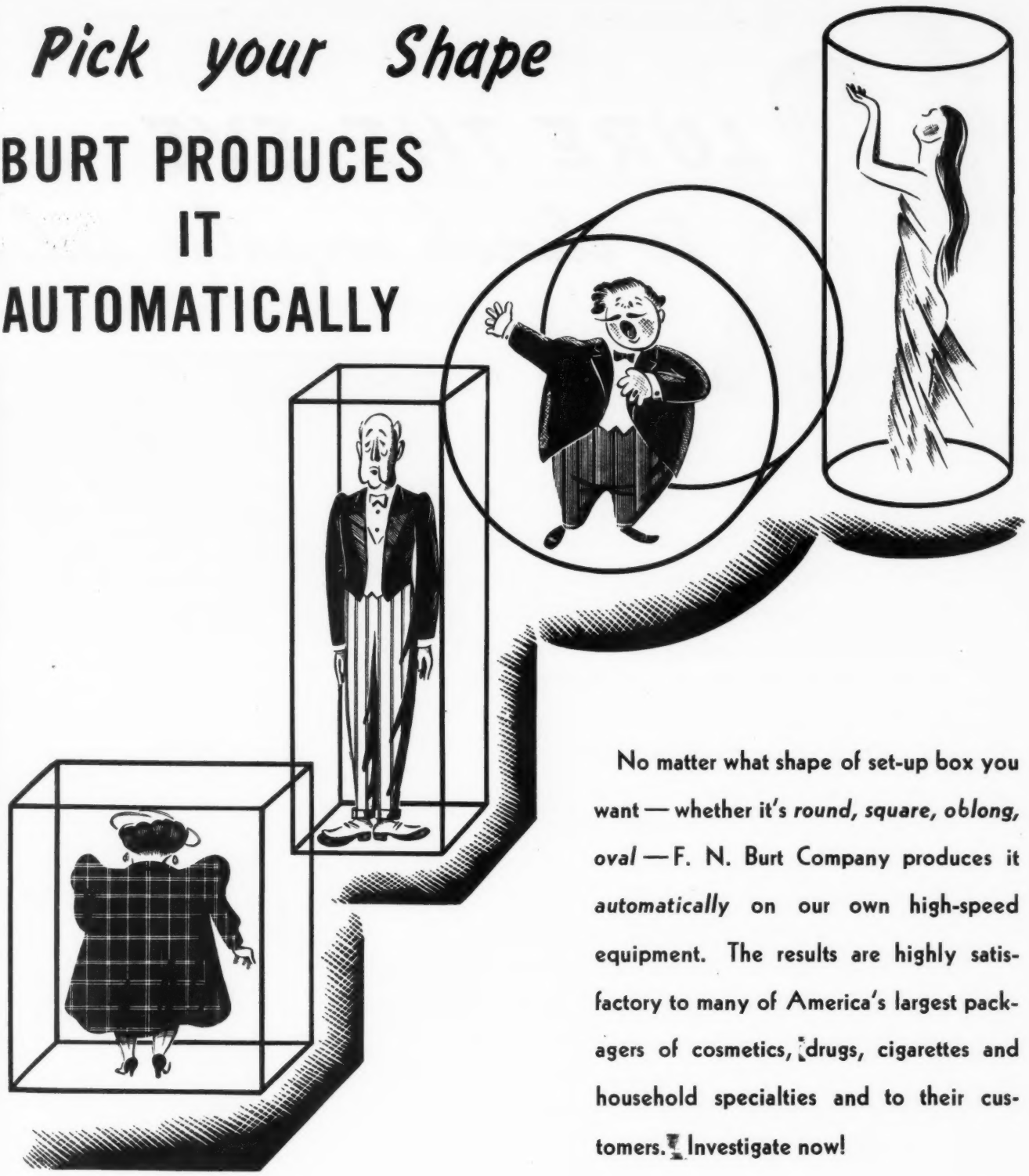

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Determining shelf life of packaged cereals[1]

by C. E. Felt, A. C. Buechele and L. F. Borchardt;[2] R. C. Koehn, F. A. Collatz and F. C. Hildebrand[3]

Consumer acceptance of ready-to-eat cereals depends in large measure upon their quality at the time of serving. These products may lose their appeal for a variety of causes, but one of the most important is loss of crispness resulting from absorption of moisture from the atmosphere. To prevent such moisture absorption, cereals are customarily packaged in containers which resist water vapor penetration. The amount of package protection which must be provided depends upon the time elapsing between manufacture and consumption, and upon the atmospheric conditions prevailing during this interval. The minimum protection required will vary with the region in which the products are stored in jobbers' warehouses and on grocers' shelves. For example, greater protection will be required for cereals destined for an area of high average atmospheric water vapor pressure, like the Gulf Coast, than in a dry region like Salt Lake City.

The shelf life of a product in any type of package in various areas can presumably be estimated either by actual field tests or by calculation from weather data together with laboratory measurements of package efficiency under known atmospheric conditions. Of the two methods, the field test is the more direct because only two assumptions need be made; the first is that the storage location employed for the test is typical of the area which it purports to represent, and the second, that weather conditions during the test were normal for the time of year in that area. Careful selection of test locations will minimize errors arising from that source, and the fact that most field studies extend over 6 to 30 weeks will tend to lessen the effect of day-to-day weather variability. Because the storage life in a particular area is greatly influenced by the time of year in which the product is first placed in the region, the accumulation of shelf life data by actual field test in all market areas for all seasons becomes a very elaborate, expensive, and time-consuming procedure.

Shelf life data can be obtained much more readily by calculation from laboratory measurements of package performance plus weather data if a number of assumptions are made. The present study was designed to test whether shelf life values so calculated would agree well enough with data obtained by field test to warrant replacing all field tests with the simpler laboratory method of obtaining such data.

Field study

Seven ounces each of a puffed corn cereal and a puffed oat cereal were packaged in cartons $6^1/_2 \times 2^3/_8 \times 8^1/_4$" containing standard single waxed cereal glassine liners. The cereals were taken from commercial production, packaged under commercial conditions, and distributed to 12 different cities in the United States. They were stored, beginning in April, so as to be exposed to atmospheric conditions prevailing in commercial distribution in that area. Every two weeks, three packages of each cereal were removed at each point and sent to the laboratory by air express in special moistureproof cartons. The packages were opened and the contents inspected for eating quality and moisture content.

The moisture content of each cereal was plotted against storage time in weeks for each city and quadratic curves were fitted to the data by the method of least squares. Past experience had enabled us to select a moisture level at which these products become unsatisfactory, and the time in weeks required for the cereals to reach this moisture level in each city was taken from the fitted curves. These values in Table II are expressive of the life of each cereal in each city.

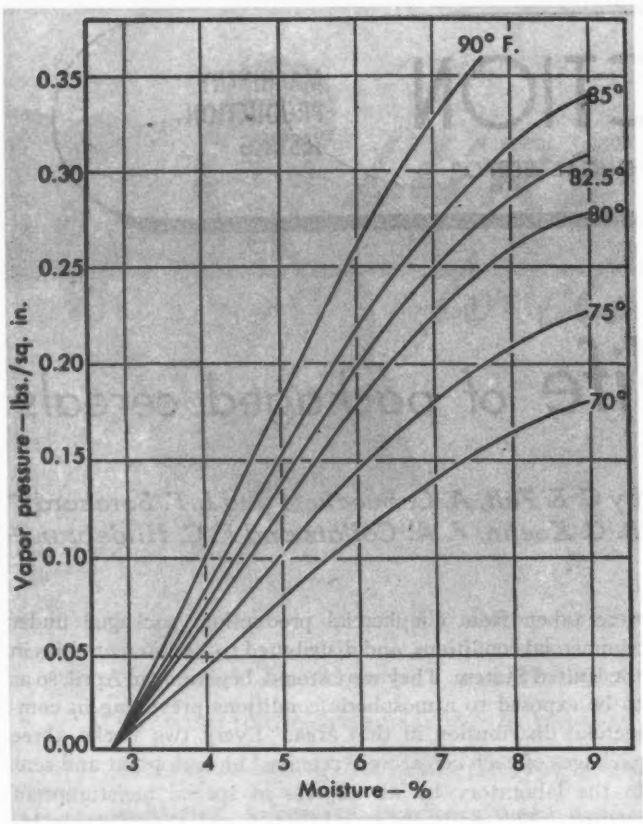
It should be emphasized that the values shown are good only for these two cereals in the particular type of package employed when storage is started during the month of April.

Determination of shelf life by calculation

In estimating shelf life by calculation, the basic assumption was made that, over the range of atmospheric conditions normally encountered, the rate of water vapor gain by a

A manufacturer must determine the degree of packaging protection required to get his product to the consumer in an acceptable condition, taking into account varying climatic conditions in various sections of the country. Indications of packaged cereal shelf life obtained by laboratory calculation are compared with results obtained by field studies. The conclusion is that reliable shelf life data can be obtained by computation from Weather Bureau data for the locality of sale together with laboratory data on product and package. This paper is reprinted from the May 1945 issue of Cereal Chemistry.

[1] Paper No. 62, Journal Series, General Mills Research Department, General Mills, Inc., Minneapolis. Reprinted by permission from the May 1945 issue of *Cereal Chemistry, 22:* 261–271.
[2] Research Department, General Mills.
[3] Products Control Department, General Mills.



1—*Moisture content effect on vapor pressure of corn meal.*

packaged hygroscopic material is approximately proportional to the absolute water vapor pressure difference existing between the material and the atmosphere to which the package is exposed. This assumption has been discussed by Carson (1937) and by Halladay (1942), both of whom conclude that it holds under normal conditions but not when the relative humidity is abnormally high.

The general expression defining the amount of water vapor transmitted through a definite area of a given barrier during a definite time interval for a given difference in water vapor pressure across the barrier is:

$$W = RAT(p_1 - p_0) \qquad (1)$$

where W = weight of water transmitted;
R = permeability of the barrier in weight of moisture transmitted per unit of area per unit of time per unit of vapor pressure difference;
A = permeable area of the barrier;
T = time;
p_1 = vapor pressure of higher humidity atmosphere;
p_0 = vapor pressure of lower humidity atmosphere.

For use in this study, equation (1) was simplified by taking the unit of A to be the permeable area of the package. The rate R was then replaced by R_1, the rate per package, and the expression became:

$$W = R_1T(p_1 - p_0) \qquad (2)$$

where W = water transmitted (per package);
R_1 = permeability of the fabricated package per week per unit of vapor pressure difference (pounds per square inch);
T = time in weeks;
p_1 = average water vapor pressure of the external atmosphere in pounds per square inch during time T;
p_0 = average water vapor pressure of the product in pounds per square inch during time T.

If, then, the permeability characteristics of the package, as represented by R_1, are known, as well as the vapor pressure of the atmosphere in which the package is stored and the vapor pressure of the cereal product itself, the gain of water for any definite time interval can be calculated from the equation. As has already been mentioned, the average value of the vapor pressure of the storage atmosphere can be obtained from weather bureau data.

If a given package is stored under known controlled conditions, the value of R_1 can be determined from the observed behavior of the package under these conditions. For this determination, packages were placed in a controlled weather room operating at an average temperature of 82.5 deg. F. and a vapor pressure of 0.36 lb./sq. in. (66% relative humidity). The rate of water vapor gain was noted by determining the moisture content of representative packages at the end of various storage periods.

Unfortunately, the calculation of R_1 is complicated by the fact that the vapor pressure of a cereal product changes with its moisture content, as shown by the curves in Fig. 1. Thus, the value for p_0 in equation (2) is not a constant but is a function of W. This necessitates the calculation of R_1 by the method of progressive approximation for assigned values of R_1. By using different values of R_1 in the calculations, a value of R_1 is found that gives a moisture-time curve that closely approximates the curve obtained experimentally. The method employed in the solution for R_1 is illustrated in Table I. Here, for the sake of illustration, R_1 has been

TABLE I—ILLUSTRATION OF METHOD FOR CALCULATING INCREASE IN CEREAL MOISTURE CONTENT ON STORAGE

(Temperature 82.5° F.; atmospheric vapor pressure [p_1] 0.36 lb./sq. in.; R_1 taken to be 10)

Cereal stored for	*Moisture content at beginning of period*	*Assumed ave. v. p. of cereal during period* p_0	$p_1 - p_0$	*Rate of moisture gain* $W/T = 10 (p_1 - p_0)$	*Wt. of package contents at end of period*	*Moisture content at end of period*
weeks	%	*lb./sq. in.*	*lb./sq. in.*	*g./week*	*g.*	%
					199.70	3.35
1	3.35	0.036	0.324	3.24	202.94	4.89
		0.084	0.276	2.76	202.46	4.67
		0.078	0.282	2.82	202.52	4.70
2	4.70	0.120	0.240	2.40	204.92	5.87
		0.154	0.206	2.06	204.58	5.66
		0.149	0.211	2.11	204.63	5.68
3	5.70	...	...	...	...	...

arbitrarily assigned a value of 10. At its initial moisture content of 3.35%, the corn cereal is found from moisture equilibrium studies to have a vapor pressure of 0.036 lb./sq. in. It is first assumed that this cereal vapor pressure will exist throughout the first week of storage; then the vapor pressure difference between the outside and the inside of the package ($p_1 - p_0$) for this period is 0.360 − 0.036, or 0.324 lb./sq. in. For this vapor pressure difference and for the assumed value of R_1, the moisture gain would be 10 × 0.324, or 3.24 g. The addition of this amount of water vapor to the cereal would bring its moisture content to 4.89% at the end of the first week of storage.

This moisture content will obviously be too high since it was calculated on the assumption that the vapor pressure of the cereal remained constant for the entire week, whereas

actually it increased continuously as the moisture content increased; thus the value of $p_1 - p_0$ actually was less than that assumed in this first calculation. If, then, it is assumed that the average vapor pressure during this period was the mean of the pressures corresponding to the initial moisture, 3.35%, and the first approximation to the moisture at the end of a week's storage, 4.89%, a second approximation can be made which will more closely approach the true moisture content at the end of this storage period. This mean is the average of 0.132 and 0.036, or 0.084 lb./sq. in. The new value for $p_1 - p_0$ is then 0.360 − 0.084, or 0.276 lb./sq. in. After the calculations are repeated, it is found that this second approximation gives a moisture content of 4.67% at the end of the week of storage.

This process can be repeated as often as desired, with increasing precision in the estimate of the final moisture content. It was arbitrarily decided to discontinue each series of estimations when two successive final moisture values differed by 0.05% or less. The final value was then rounded to the nearest 0.05%.

It will be remembered that in these sample calculations a value of R_1 equal to 10 was assumed. The calculations for a given package type were repeated with various values of R_1 until a value was found for which the calculated rate of moisture gain agreed with the rate observed when samples of this type of package were stored under known atmospheric conditions. A value of R_1 equal to 10 was found to give the best agreement for the corn cereal. (See Fig. 2.) When the factor 10 was used in the calculation for the oat cereal, the storage time found by the calculation was about 13% longer than that given by the curve obtained from experimental data by statistical means. Because, at best, approximations of the nature herein attempted are only informed estimates, it was decided to use the factor 10 for both products in the following calculations. The agreement between observed and calculated results with R_1 equal to 10 is shown in Fig. 2. The observed data are also represented by a curve fitted to the experimental points by the method of least squares.

After the constant R_1 for any type of package had been determined in this manner, equation (2) was then employed to calculate shelf life in 11 market areas for which weather data were available. The average vapor pressure for each month was computed from 50-year-average weather bureau figures for temperature and relative humidity in the area and these values substituted as p_1 in equation (2). The equation was solved by the technique of progressive approximation previously described. In estimating the vapor pressure of the cereal, storage temperature was taken to be 70 deg. F., unless the average of daily mean temperatures was above 70, in which case the higher value was used. Four weeks was taken as the unit of time for these calculations unless atmospheric vapor pressures were high and the rate of moisture gain rapid; in such cases, a one-week interval was used.

For each area, 12 sets of calculations were carried out, one set assuming that storage was begun on January 15, one set assuming a starting time of February 15, etc. Each set of calculations was continued until the moisture limit for satisfactory quality was attained. The time necessary to reach this limit (shelf life) was then plotted against the time of starting storage. Fig. 3 shows the results obtained for three of the 11 areas and illustrates the manner in which shelf life varies with the season of the year. Variation in shelf life between localities is shown by a comparison between the parts of this figure, as well as by Table II. In the cases where the atmospheric vapor pressure was not high enough to cause the product to reach the critical moisture level within 26 weeks, the calculations were discontinued, and those portions of the curves are shown as broken lines. Thus in Fig. 3, the calculations for Chicago storage starting during the months of August through December indicate an expected shelf life greater than 26 weeks.

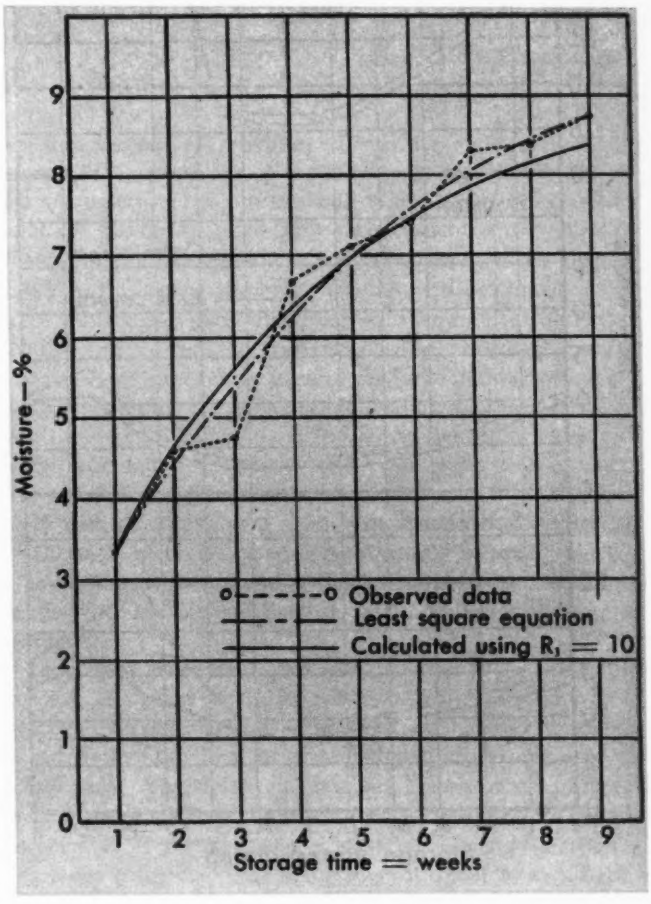
Laboratory and field studies

In Table II is shown the comparison between the calculated shelf life of the single liner package and that obtained by field tests starting April 15. Control cabinet results are included for comparison.

Good agreement was obtained between calculated and field study shelf life values except in the case of San Francisco. In San Francisco, the vapor pressure never reaches very high values or drops to very low values, and the effect of storage temperature on shelf life is very great, as is apparent from the following consideration. Because the rate of water vapor pickup is proportional to $p_1 - p_0$, any variation in p_0 will have a large effect on $p_1 - p_0$ if p_1 is small; and the vapor pressure of the cereal (p_0) at any moisture content increases rapidly with rising temperature.

To further illustrate this point, the value of shelf life for San Francisco is based on a storage temperature of 70 deg. F., and a value of 11 weeks for the corn cereal was obtained by calculation. If the product had been stored at 75 deg. F., the shelf life by calculation would have been 18 weeks. (The observed life was 19 weeks.) In almost all the other localities studied, the vapor pressure in the summer months is so high that the effect of storage temperature on shelf life is not as significant as it is in San Francisco. In Baltimore, for in-

2—Curves obtained from observed data and statistically treated observed data with curve obtained using R_1.



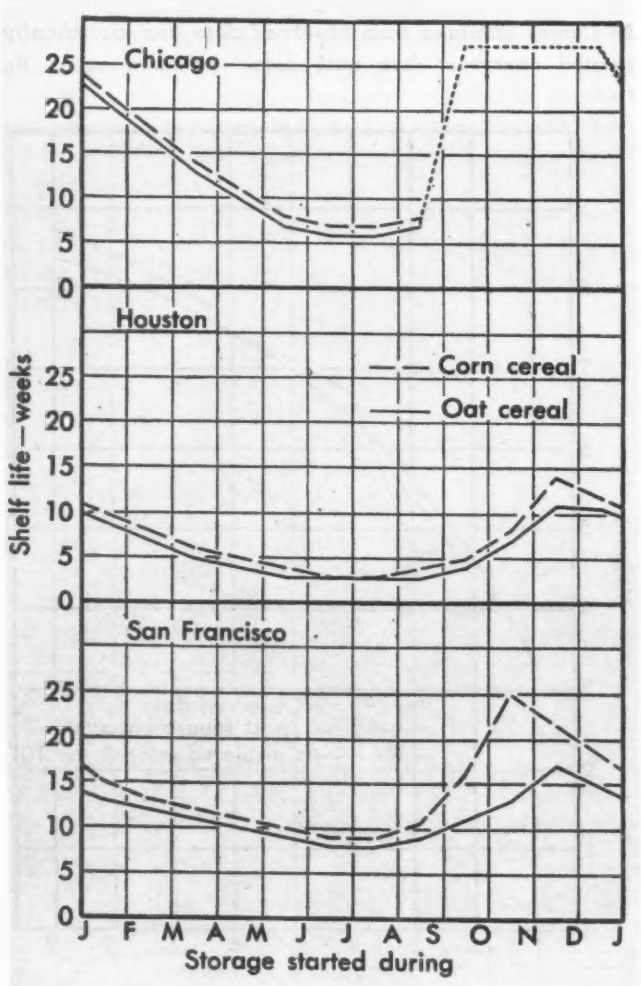
stance, storage at 5 deg. F. above the assumed average temperature would have lengthened the shelf life by only two weeks.

TABLE II—COMPARISON OF CALCULATED AND OBSERVED SHELF LIFE
(Field test started in April)

Location	Weeks to reach moisture limit			
	Corn cereal		Oat cereal	
	Observed	Calculated	Observed	Calculated
Control cabinet	5.0	5.0	3.9	4.4
Houston, Tex.	4.5	5.0	4.5	4.0
Jacksonville, Fla.	5.5	6.0	4.5	5.0
Oklahoma City, Okla.	8.5	8.0	7.0	7.0
Kansas City, Mo.	10.5	8.0	9.0	8.0
Baltimore, Md.	11.5	9.0	9.5	8.0
Chicago, Ill.	14.0	11.0	11.0	10.0
Providence, R. I.	12.5	11.0	12.5	10.0
Buffalo, N. Y.	10.0	10.0	9.5	10.0
Minneapolis, Minn.	11.0	11.0	11.0	10.0
Portland, Ore.	17.0	13.0	12.0	11.0
San Francisco, Calif.	19.0	11.0	16.5	10.0
Ogden, Utah[1]	..	..	..	..

[1] The vapor pressure in Ogden reaches a maximum of 0.15 lb./sq. in. in July and August when the mean temperature is 80° F. and 75°F., respectively. Under these conditions, the cereal products cannot reach the critical moisture level. This was confirmed by observation; the products on test in Ogden did not attain this level even after 24 weeks of observation.

3—*Cereal shelf life in Chicago, Houston, San Francisco.*



Discussion

As has already been mentioned, the quality of prepared cereals depends markedly upon the moisture content at the time of consumption. A manufacturer is faced with the question of the degree to which he must protect his product to get it to the consumer in an acceptable condition. Thus, for instance, it would be possible to package cereals of the present type in tin, under which condition the shelf life, from the moisture standpoint alone, would be indefinitely long. At the other extreme, the products could be provided with little or no protection against the uptake of water vapor, in which case the shelf life would be unreasonably short. There is a package type somewhere between these two extremes which satisfies most of the factors of economics which need be considered in the manufacture and distribution of products of this type. The degree of protection must be consistent with packaging and distribution costs and consumer acceptability. The answer to this complex question is forthcoming only after an investigation of the present type.

A study of the results has shown that it is possible to obtain the necessary information in two ways: either the packaged article can be put on the shelf in the locality and at the time of year for which the information is required, or use can be made of weather bureau data, together with laboratory information on the characteristics of the package and the packaged product. The results indicate that the latter method is capable of yielding results sufficiently accurate for practical use. The former method, while capable of giving accurate shelf life values, is time consuming and expensive, particularly if it is applied to all geographic locations at all times of the year.

These studies have shown that the shelf life of packaged cereals depends greatly upon the geographic location and upon the time of the year at which the packaged product is placed in that location. Because of these facts, differential packaging may be indicated where merchandising procedures can take advantage of such packaging. Thus, for instance, in Salt Lake City, Utah, the single liner package such as was studied in this paper would be more than adequate during any time of the year. On the other hand, in order to provide adequate shelf life in locations such as Houston, Tex., it is necessary to use a greater degree of protection than is afforded by the single liner package. In localities such as Chicago, the products could be packaged adequately in a single liner package for the greater part of the year, increasing the degree of protection as the more severe times of the year are approached.

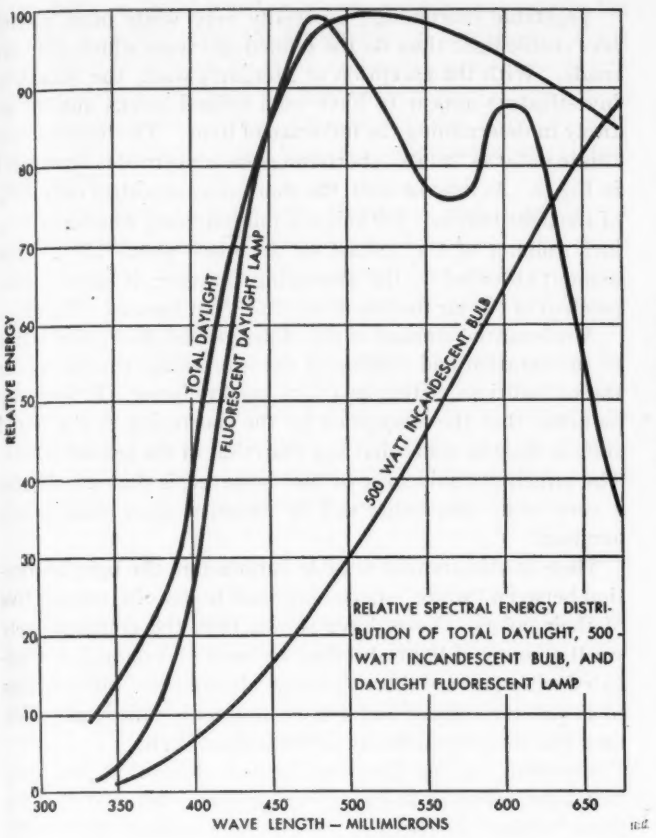
An inspection of the curves of shelf life versus time of year (Fig. 3) confirms the fact that storage life is also dependent, even though to a minor degree, upon the hygroscopic characteristics of the packaged product itself, a property which can be determined in the laboratory by moisture equilibrium studies.

Summary

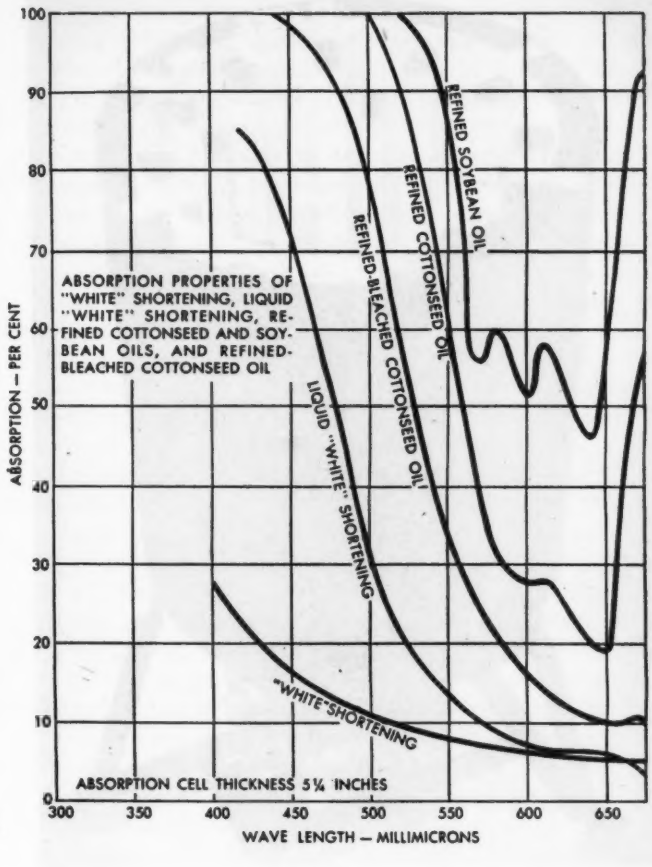
A comparison of packaged cereal shelf life results obtained by field studies and by calculation shows that reliable data can be obtained by computation from weather bureau data for the locality, together with product and package data obtained under known laboratory conditions.

The agreement found between calculated and observed shelf life values is quite good in most cases. An explanation is given for the wide discrepancy noted with values at one point.

The shelf life of a packaged (*Continued on page 170*)


RELATIVE ENERGY
TOTAL DAYLIGHT
FLUORESCENT DAYLIGHT LAMP
500 WATT INCANDESCENT BULB
RELATIVE SPECTRAL ENERGY DISTRIBUTION OF TOTAL DAYLIGHT, 500-WATT INCANDESCENT BULB, AND DAYLIGHT FLUORESCENT LAMP
WAVE LENGTH — MILLIMICRONS

1


ABSORPTION — PER CENT
ABSORPTION PROPERTIES OF "WHITE" SHORTENING, LIQUID "WHITE" SHORTENING, REFINED COTTONSEED AND SOYBEAN OILS, AND REFINED-BLEACHED COTTONSEED OIL
REFINED SOYBEAN OIL
REFINED COTTONSEED OIL
REFINED-BLEACHED COTTONSEED OIL
LIQUID "WHITE" SHORTENING
"WHITE" SHORTENING
ABSORPTION CELL THICKNESS 5¼ INCHES
WAVE LENGTH — MILLIMICRONS

2

Effect of light . . . on foods packed in glass; test method and conclusions

*by A. R. Gudheim**

Most of us will recall that previous to World War II, the major portion of the household all-vegetable shortenings was marketed in tin cans. These containers were very well suited for the purpose, the more popular style being practically nonbreakable, completely greaseproof, tamperproof, gastight, light in weight, easy to handle during filling, convenient to open and moderate in cost.

The national marketing of these shortenings had become so completely dependent on metal containers that it would have been difficult to imagine getting along without them. Nevertheless, shortly after our entry into the present conflict, the WPB prohibited the use of any type metal container for household shortenings as well as many other commodities. At that time, there were only two noncritical substitute materials available in sufficient quantity to meet the industry's needs, namely, paper and glass. Several concerns adopted paper containers that were cellophane-laminated or that had inserted cellophane bags, while others selected glass jars.

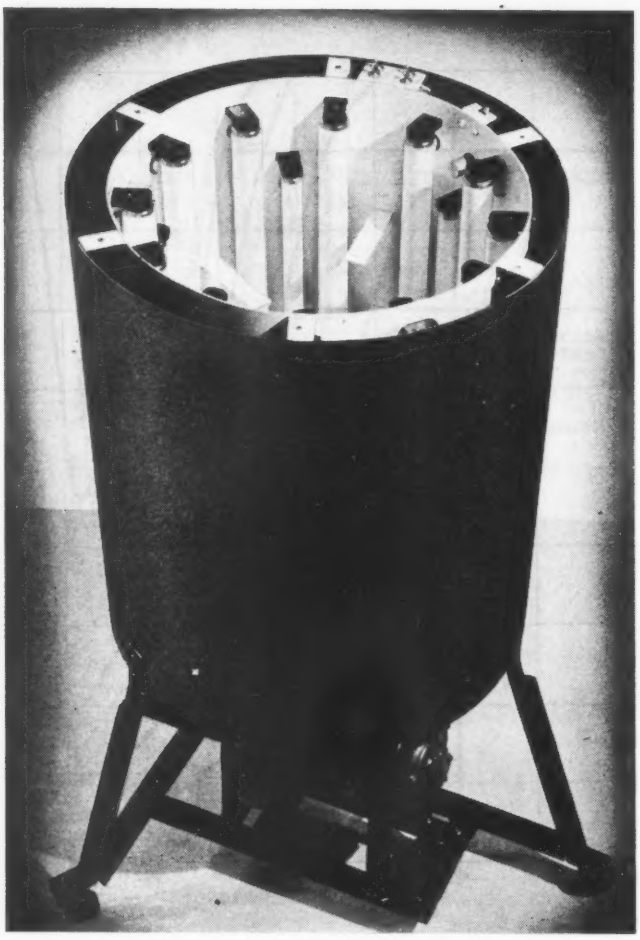
Fortunately, however, WPB's first restraining order did not restrict the use of metal caps for glass containers, but their diameter was limited, which explains the comparatively small-sized opening of the early shortening jars. This gave those manufacturers who adopted glass jars an opportunity to hasten their conversion without being faced with the more serious problem of providing a substitute closure. Soon thereafter, even the use of metal for caps was prohibited, so the manufacturers of household all-vegetable shortenings had to adopt and assist in the early development of a number of new-type packages, particularly with respect to their closures.

When considering glass jars, several questions immediately arose concerning their handling with equipment intended solely for metal cans, such as rate of filling, breakage, weight and so on. Moreover, in view of the large number of papers published during the past decade dealing with the effect of light on vegetable oils, its influence on shortenings was one of the more important points to be evaluated from a commercial standpoint. The remainder of this paper deals principally with this factor and describes the testing procedures.

The same method and equipment should be readily adaptable to the evaluation of many other glass-packed edible products which are usually displayed on store shelves or in windows.

In passing, however, it should be mentioned that with the possible exception of the influence of light, glass jars have been well suited for household shortenings. Means have been found to handle them at approximately the same rate as metal cans. The weight of glass jars as contrasted to metal cans likewise was not found to be as high as anticipated. In brief, then, the handling of glass jars for shortening purposes has compared very favorably with that of metal con-

* Research Department, Lever Bros. Co., Cambridge, Mass. Adapted by the author from his paper which appeared originally in *Oil & Soap* (*20*, 197).



3—*Illustration shows machine used for testing the effect of light on shortening packed in 1-lb. glass jars.*

tainers formerly used, which is also true of their over-all costs.

Messrs. Greenbank, Holm, Coe, and LaClerc,[1] who have reported the major portion of the work carried out in this country on the effect of light on vegetable oils, all agree that light accelerates autoxidation and that certain parts of the spectrum are more effective in promoting these changes.

Morgan[2] has investigated the influence of light on fat-containing commodities and found that blue and ultraviolet light materially accelerate the development of rancidity in potato chips, crackers, cakes, butter, candies and so on when other visible light, such as red and yellow, has little effect.

A number of us are apt to consider light as being only that narrow region in the spectrum to which our eyes are sensitive, that is, between about 450 and 700 millimicrons. Strictly speaking, this is probably true, but generally, light is considered as extending well below and above this range, the region down to about 100 millimicrons being called the ultraviolet and that above 700 the infrared. For several reasons, however, we are not concerned with the light below about 325 millimicrons, the principal one being that daylight does not extend below 275–300 millimicrons. Even if it did, this would be of no commercial importance because ordinary jar glass screens or filters out the light below 300–325 millimicrons. In addition, window glass cuts out the light below about 320 millimicrons completely and permits only about 25% of that in the range of 340 millimicrons to pass.

Light from ordinary incandescent bulbs does not extend lower than about 350 millimicrons and even the portion below 450 is relatively weak, as may be seen in Fig. 1. The spectral energy distribution characteristics of daylight fluorescent lamps closely approximate that of solar light and they should, therefore, be suitable as a light source for test work.

Vegetable shortenings, especially very white ones, absorb less visible light than do the refined oils from which they are made. With the exception of Morgan's work, the American investigators appear to have used refined stocks almost entirely in determining the influence of light. The limitation of this in so far as "white" shortenings are concerned is illustrated in Fig. 2. As may be seen, the shortening absorbed only 10% of the light between 400 and 675 millimicrons, whereas a $5^1/_4$ inch column of the refined oil absorbed about 75%. The amount absorbed by the shortening, however, is largely independent of the jar thickness but this is not the case with oil.

A substantial amount of this difference in absorption is due to the aeration and chilling of the shortening, the fat, under these conditions, acting as a very good reflector. It may also be noted that the absorption by the shortening in the liquid state is likewise somewhat less than that of the refined stocks. The principal significance of this, however, is that it indicates a very white shortening will be obtained upon chilling and aeration.

There is also another notable variation in the light absorption between "white" shortenings and liquid oils, irrespective of their colors. Tests have shown that the comparatively small amount of light absorbed by such shortenings is dissipated within a very short distance. In contrast, oils continue to absorb throughout and if the container is sufficiently wide, they will absorb practically all the incident light.

According to the Grotthus-Draper absorption law, only that light which is absorbed can produce chemical changes. Since "white" shortenings absorb comparatively little light, it would not be surprising, therefore, to find that they are relatively unaffected by indoor light of moderate intensities.

The question then arises as to what can be considered a moderate interior intensity. So far as stores are concerned, surveys have shown that with an outside intensity of 6,500 foot-candles, the interior intensity measured only 15–30 foot-candles on the shelves in the front of the store, 5–15 in the middle and 1–5 foot-candles in the shaded part.[3] Thus, jars on the shelf of a store are apt to receive only $^1/_{200}$ to $^1/_{1,300}$ as much light as they would if stored outdoors. Furthermore, light, after passing through window glass, has lost a generous amount of its invisible ultraviolet which, as will be brought out later, is the more harmful component.

Hardy and Perrin[4] state that the maximum illumination due to both sunlight and skylight is approximately 10,000 foot-candles, and that the day is considered dreary if the outside intensity is as low as 1,000 foot-candles. They comment, however, that this is in marked contrast to the levels of illumination that are ordinarily produced indoors, where the illumination is commonly in the neighborhood of 20 foot-candles by natural light and less than 10 by artificial light.

In carrying out photochemical tests, one is not usually as concerned with illumination intensity as with the power and characteristics of the light. For example, even strong ultraviolet radiation has practically no illumination value, but yet this component is generally very effective in promoting photochemical changes. The mean value of the solar constant is approximately 0.135 watt or 135,000 microwatts per square centimeter. Five to 10% of this is in the ultraviolet region, 35–45% in the visible and the remainder in the infrared range. Only the 35–45% visible light, however, is effective from an illumination standpoint.

Our tests were carried out by exposing shortening in commercial metal-capped glass jars to two higher indoor illumination values and one representative of average store light,

namely, 250, 50, and 5–10 foot-candles. These values were due almost entirely to daylight, the samples exposed to the highest intensity being placed directly in a window. These samples had the usual jar labels and each one was spaced several inches from the adjacent specimens so as to give access to light from all directions except the bottom. The jars were also rotated once each day to insure a more even distribution of the light.

Samples from each of these three sets were examined at weekly intervals, and the peroxide values on the ones stored at the two lower light intensities showed no change even after many weeks. The peroxide value* on the specimens kept at the high intensity was only 1.5 after 10 weeks' time. From an oxidation standpoint, even this value is insignificant and very much less than those reported as being obtained on oils.

The odor and flavor of the samples stored at the lowest intensity remained substantially unaffected for the 10-week period and the ones kept at 50 foot-candles showed only a slight change. The specimens in the window, however, exhibited flavor and odor changes after only a few weeks and these were very pronounced at the expiration of the 10-week period.

The flavors and odors were quite characteristic and by no means reminiscent of rancid fat as most of us think of it. The failure to develop peroxides, even at the higher light intensities, indicates that indoor light has practically no influence on the oxidation of "white" shortenings in glass jars.

It was considered of interest to determine whether certain wave length bands are more effective in promoting this odor and flavor change than others. This was considered likely and tests were carried out to check this point. Needless to say, such information would be essential in selecting the proper jar glass to overcome the effect of strong light as well as that of a more moderate intensity over an extended period.

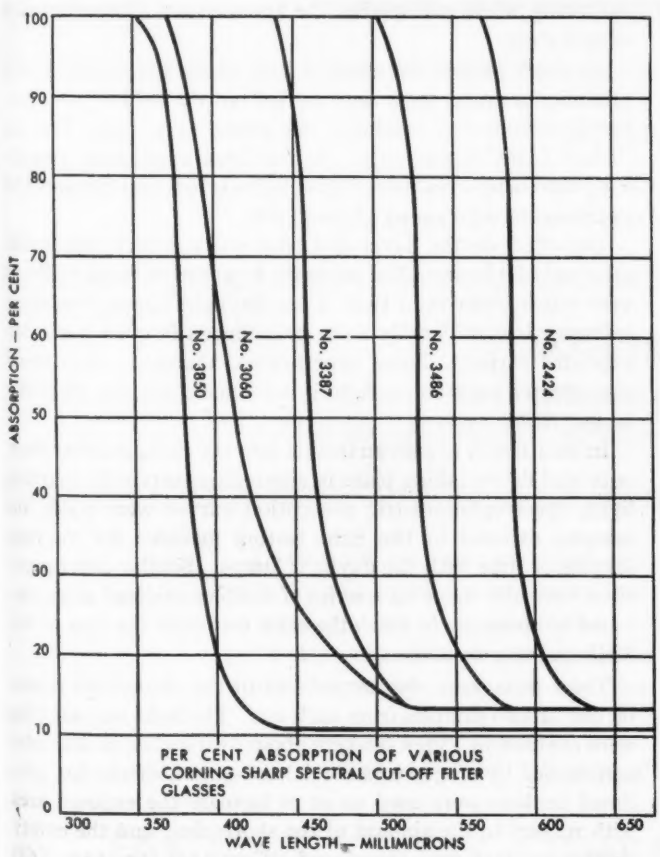
These experiments required the construction of an accelerated light testing machine having approximately the same spectral energy distribution properties as daylight, at least down to 325 millimicrons. Outdoor daylight is obviously unsuitable for this purpose because of its great variation, even from hour to hour and the impracticability of regulating the temperature of the test specimens. Interior daylight is likewise unsuitable because of the large variation and its decreased intensity. The accelerated testing also had to be accomplished without increasing the temperature of the samples.

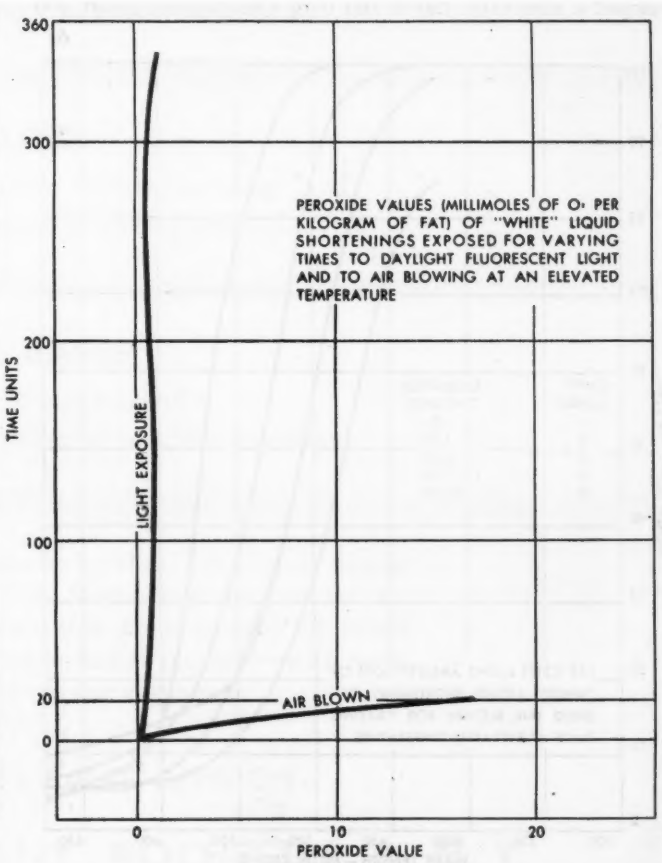
As was shown in Fig. 1, incandescent light is notably deficient in the shorter wave lengths and, for this reason, was not considered satisfactory as an energy source. Such bulbs also generate considerable heat and it would be difficult to control the temperature of the samples when using a sufficiently high intensity. Daylight fluorescent bulbs, however, closely approximate solar radiation in their distribution properties and should be suitable. Their slight deficiency below 375 millimicrons can be compensated for by using one or more General Electric 360 BL Type F "Black Light" lamps. These bulbs are so termed because most of their light is invisible, their entire radiation, other than infrared, being concentrated between 325 and 400 millimicrons.

With these points in mind, a machine was constructed from a metal cylinder about 18 in. in diameter and 26 in. high. Twelve 24-in. daylight fluorescent and six "Black Light" lamps were mounted parallel to the axis on the inside of the cylinder and they were so wired that any number of each type could be turned on at one time. It was not necessary, however, to employ any of the "Black Light" bulbs to obtain results comparable with those secured on the samples kept in the window.

A moderate sized blower was mounted on the bottom of the

* Millimoles of O_2 per kilogram of fat.





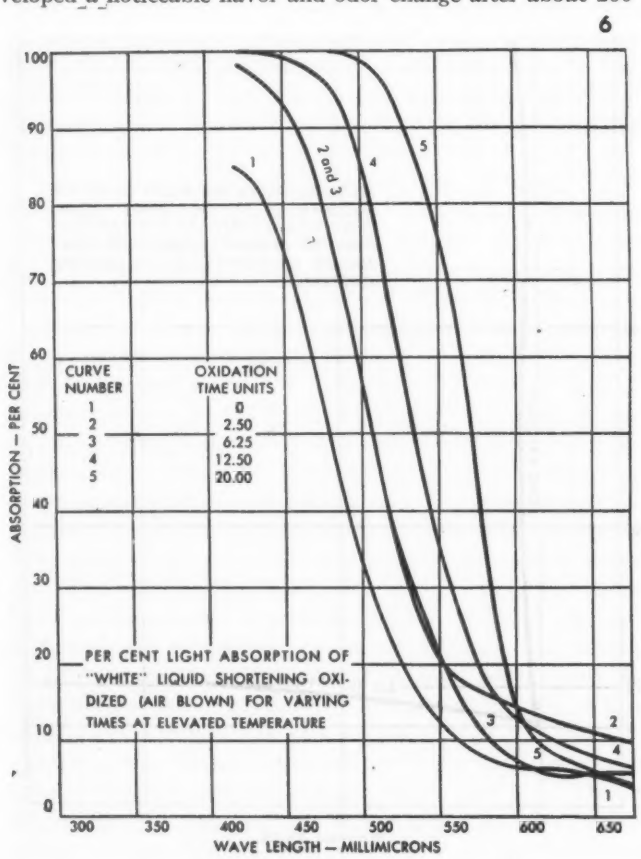
cylinder to control the temperature of the samples. The inside of the cylinder and its top and bottom were painted with a high gloss white paint to increase the reflection from the back side of the lamps. This unit is illustrated in Fig. 3.

The test samples were mounted on top of each other in the middle of the shell and measurements at the sample positions indicated an intensity of about 1,000 foot-candles with the 12 daylight bulbs on. However, theoretical computations based on the lumen output of the lamps and assuming an over-all efficiency of 75% indicate a considerably higher intensity and a power of about 0.0172 watt or 17,200 microwatts per square centimeter.

Tests were carried out with this machine on shortenings in commercial 1-lb. metal-capped jars by completely surrounding the jars with different sets of Corning filters. In order to accentuate any difference due to these filters, the usual paper labels were left off the samples. Each set of filters had different cut-off points, the first screening out all the light below about 380 millimicrons, the second that below 420 and so on up to 590 millimicrons. The absorption properties of the filters are shown in Fig. 4.

If the samples protected by the first set of filters showed any change in odor and flavor upon exposure, it would follow that this was due entirely to light above 380 millimicrons. And in a like manner, if the ones surrounded by the second set exhibited any change, this must be due to the radiation above 420 millimicrons. The transmission properties of the filters show that the ones with the lowest cut-off values transmit more total energy than the ones with the higher cut-off points. No particular effort, however, was made to compensate for this variation by turning off one or more lights as the exposure period was considered more than ample to accentuate any difference.

The samples surrounded by the first two sets of filters, that is, those cutting out below 380 and 420 millimicrons developed a noticeable flavor and odor change after about 200 hours' exposure at room temperature (70 deg. F.), whereas the ones protected by the filters cutting out below about 460, 530 and 590 millimicrons showed little change. None of these specimens, however, developed peroxide values higher than about 1.5.



These results indicate: (1) That the portion of the spectrum between 325 and 460 millimicrons is largely responsible for the flavor and odor changes in "white" shortenings induced by strong light, and (2) that light above 460 has comparatively little influence. Light below 325 millimicrons probably has even a more marked effect, but, as has been mentioned, from a commercial standpoint we are not concerned with radiation in this range.

In view of the low absorption and high reflectance properties of "white" shortenings in the visible range, it is not surprising to find that even very strong light above 460 millimicrons has comparatively little influence on the flavor or odor.

The foregoing results indicate that almost the entire light effect could be overcome by using jar glass screening or filtering out light below 450–500 millimicrons. The general spectral transmission properties of some amber glasses indicate that these should be satisfactory for this purpose.

Accordingly, shortening was exposed in several different commercial amber glass jars in the light testing machine with all the daylight fluorescent lamps on. As was to be expected, these samples showed practically no change in flavor and odor, and their peroxide values were less than 0.5 even after 200 hours' exposure. Tests were also carried out with commercial blue and green jars, but as could be predicted from their general transmission properties, they were not nearly so effective as the amber ones.

Similar experiments were also made in opal glass jars. This type of jar is generally used for cold cream and appears to be substantially opaque. This glass was found to be only moderately better than ordinary clear glass, but this is not surprising when one studies the transmission characteristics of opal glass.

To check further the effect of light in the harmful 325–450 millimicron range, tests were carried out on "white" shortening in commercial unlabeled one-pound jars, using the six "Black Light" lamps only. As has been mentioned, practically the entire radiation of these bulbs is between 320 and 420 millimicrons with a peak at about 360.

The effect on the flavor and odor was not very noticeable after only 50 hours. The intensity or power of these bulbs is very much lower than that of the daylight lamps, but their influence is considerably more pronounced in even a shorter exposure period. These experiments, therefore, also show that shorter wave-length light is much more harmful than the longer visible rays.

In an attempt to gain an insight into the changes other than odor and flavor taking place in shortenings exposed to strong light, spectrophotometric absorption curves were made on samples exposed in the light testing machine for varying lengths of time with the daylight lamps. Similar determinations were also made on a series of samples oxidized at an elevated temperature in much the same way as in the case of the Swift stability machine.

These tests were also carried out in the ultraviolet region on one or two samples from each set. The light test samples were exposed in Pyrex beakers about two inches in diameter surrounded by empty commercial one-pound shortening jars. Small beakers were used so as to increase the exposed area with respect to the amount of the shortening, and the empty shortening jars were employed (*Continued on page 168*)

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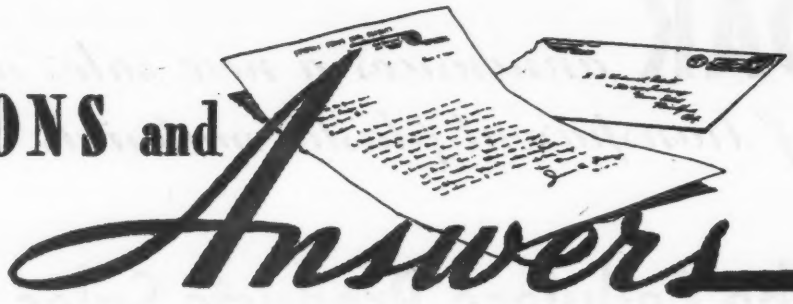
QUESTIONS and Answers



This consultation service on packaging subjects is at your command. Simply address your questions to Technical Editor, Modern Packaging, 122 East 42nd St., New York 17, N. Y. Your name or other identification will not appear with any published answer.

Work on mold inhibiting materials

QUESTION: In the March issue of MODERN PACKAGING, *Questions and Answers section, there was a reference to "stories of several of these developments and new materials seem to be coming into this field (mold protection) at a slow but constant rate." I would appreciate it if you could tell us more about these developments and where information on them could be obtained.*

ANSWER: You will notice, if you have been a reader of MODERN PACKAGING over the last year, that there have been several stories concerning mold inhibiting materials. For example, the article on "S-Coating," in September 1944 and the article on "Diphenyl in Citrus Wraps," in December 1944.

These articles describe materials and processes which have been developed to the point where they are either in commercial use or ready to be tried for various applications.

Unquestionably, this work on fungicides and mold prevention has been accelerated by the demands of the services for materials to withstand tropical conditions. As you probably know, there is a section under O.S.R.D. (Office of Scientific Research and Development) in Washington which is called the Steering Committee on Tropical Deterioration. This committee is working very closely with the Services in the development of new materials and the testing of treated materials.

As a result of this work which has been going on for the last several years, there has been a great impetus in the research work being done on moldproofing and as a result, many new materials and techniques are appearing.

Speed of laminating unit

QUESTION: We are thinking of producing a small laminating machine and we are interested in your opinion as to what would be considered a satisfactory hourly production of such a combining unit suitable for general packaging uses and laminating sheet material 18 by 24 in.

ANSWER: This question cannot be answered with any precision or detail, because there are so many possible combinations of materials and adhesives and insufficient information has been given.

The final speed of a laminating unit depends upon the surface and strength characteristics of the materials to be combined, as well as the kind of adhesive used. There are many applications where a slow rate of speed, even a small hand-driven unit, might suffice because a small number of units of various sizes are required and flexibility is more important than a high rate of production.

There are also applications where a large quantity of one size of one combination of materials are to be run and in this case rate of production is a paramount factor. On the other hand, there are many materials and adhesives which do not readily lend themselves to high speed combining operations because of the need of long times of contact with the combining rolls such as would be required by the use of heat in the rollers to aid in obtaining adhesion. Some of the plastic films or metal foils present difficulties in handling in sheet form and these will be factors in limiting the production speed of the particular unit.

You will probably find that there are so many factors involved that it will be necessary for you to use a variable speed control device of some kind on your power driven units or some brief means of measuring or controlling speed on your hand powered portable laminators.

Space does not permit the printing of all questions received and answers given. Last month our Technical Staff answered more than 50 inquiries. All questions are answered, whether published or not.

No-priority waterproofing supplies

QUESTION: We have been engaged in the manufacture of tubular paper packaging materials and have experienced considerable difficulty in obtaining supplies of waterproof glues and other waterproofing materials. We have a high priority rating but find it difficult to obtain materials readily and would like to know if you have any suggestions as to suitable materials which are not under priority regulations.

ANSWER: The foregoing question was received from a foreign company who apparently has had a great deal of difficulty in obtaining certain special waterproof adhesives with high performance requirements. Unfortunately, all of the adhesives based on synthetic resins or rubber are under strict controls, requiring the declaration of end use and some priority rating of some kind, because the base materials are under allocation.

Waterproofing agents of a resinous type are obtainable only on a similar basis and even waxes have been placed on allocation. The net result is that if a particularly high level of performance is required to meet a (*Continued on page 172*)

SODA ASH

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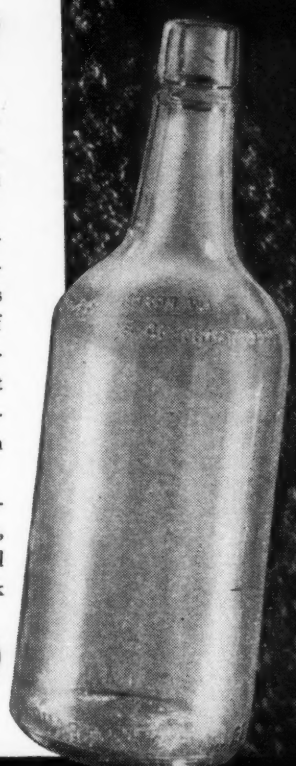
For additional interesting information on the making of fine glass, send for your free copy of "Men and Glass." Address Armstrong Cork Company, Glass and Closure Division, 5906 Prince Street, Lancaster, Pennsylvania.



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ARMSTRONG'S CLOSURES

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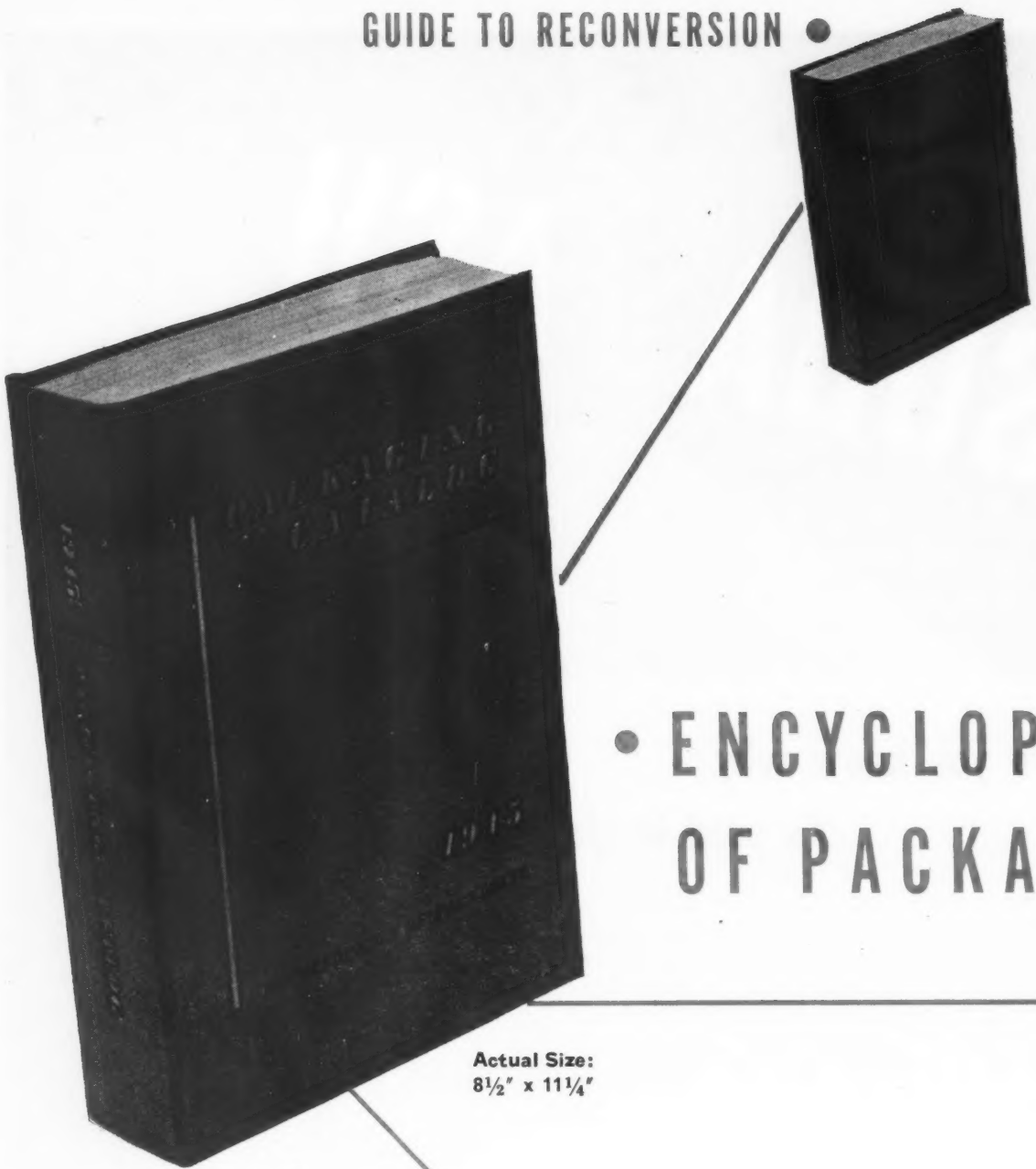

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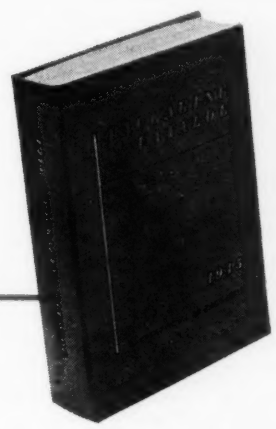

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WASHINGTON REVIEW

R. L. Van Boskirk, Washington Editor

● **Hearings on Lanham Trade Mark Bill**—By the time this item is distributed, hearings will probably be well under way on the bill to revise the present laws for protection and registration of trade marks.

Already passed by the House, the Senate hearings are expected to be more or less perfunctory—before the Senate Patents Committee.

The bill, introduced by Rep. F. G. Lanham, Texas Democrat, is considered certain of Senate approval. It would repeal all legislation pertaining to trade marks, provide for the establishment of a new "principal register," in which trade marks, service marks, collective marks and certification marks may be registered.

In going beyond previous legislation, the new proposal would permit registration of service marks, which are described as marks used in the sale or advertising of services and include names, titles, symbols, designations, slogans, character names and distinctive features of radio or other advertising used in commerce.

The bill has the blessing of the National Assn. of Mfgrs., which said in its publication:

"New legislation is necessary largely because the present trademark laws were drafted to meet a relatively obsolete concept of community and intra-state business as distinguished from modern nation-wide and international advertising and sale of goods."

The bill is the product of seven years of intensive study of the subject by Congress and industry.

● **Containerboard Situation No Better**—Members of the Containerboard and Fibre Box Industrial Advisory Committees meeting in May with WPB discussed the increased V-board requirements, possible amendments and revisions to L-317 (containers) and M-290 (containerboard), as well as labor problems and other besetting difficulties.

They were told that military and FEA requirements for fibre shipping containers, including V-boxes, have increased to such an extent that WPB may have to ask boxboard manufacturers to make some liner board for use in making shipping containers, since it was felt that production of regular containerboard mills could not be increased to the extent necessary.

Boxboard production has increased considerably over the monthly average production in 1944, but demands have more than kept pace and boxboard makers have told WPB that further demands upon them for the manufacture of containerboard will result only in a decrease of folding and set-up box production.

ON PACIFIC TOUR

R. L. Van Boskirk, Washington Editor of MODERN PACKAGING, is on a tour of Pacific bases as a guest of the Navy. Mr. Van Boskirk with a group of business paper Washington editors is making the tour by air to see for himself how military packaging performs under actual battlefront conditions. A complete report will be given later in MODERN PACKAGING. Here are a few of his cabled comments:

"One observation stands out over all others when goods are properly packaged according to methods developed since beginning of the war—they generally come through in good shape—but I have seen truckload after truckload of damaged goods largely because it was received over here in ordinary commercial packaging. Paradoxically enough fresh provisions seem to be coming through better than anything else even though in commercial packaging largely because they get more individual attention. V-boxes with sleeves are prime favorites of many supply officers.—Varied opinions concerning palletizing.

● **Containerboard Manufacturers Aided by "Urgency" Rating**—With the declaration that containerboard, as defined under Order M-290, including solid and corrugated fibre sheets, used in the manufacture of fibre containers and boxes, has been placed on the National Production Urgency List, makers of containerboard are having a little less difficult time in obtaining materials, since they are now entitled to the highest urgency ratings when seeking to replace labor losses or to increase the number of employes for additional production.

Besides containerboard, sulphate wood pulp, for which there is a high demand in paper and paperboard production, container veneer and steel strapping were added to the Production Urgency List.

These products and materials are urgently needed to meet the increasing packaging demands of the Army, Navy and essential industries, according to Benton R. Cancell, director of the WPB Forest Products Bureau.

The inclusion of these items on the National Production Urgency List has enabled manufacturers to seek and obtain higher urgency and priority ratings as well as higher manpower ceilings. This in turn, aids manufacturers materially in increasing the production of containerboard and certain other forest products sorely needed in the war effort. It was also pointed out that it should prove effective in transferring a number of workers from non-war employment to critical war jobs.

● **Order Doesn't Apply to Re-use of Containers**—Producers of products which may be packed in solid or corrugated fibre containers reformed, reshaped, repaired or reconditioned without the addition of new containerboard were benefited by an interpretation issued by WPB to L-317 which sets forth that such containers are not subject to the restrictions of the order. WPB ruled that such containers are those that a packer himself has previously used or has obtained from someone else who has previously used them for packing, storing or shipping; they are containers which would not have been suitable for immediate use without some slight alteration and repair. In any event, they are not "new."

● **Lumber Moves into Packaging News**—Lumber is moving into the news picture as regards packaging. Unless lumber production is increased, WPB Chairman Krug has said, its lack will interfere directly with the prosecution of the Pacific war. Direct war demands for lumber are already greater than they were before V-E Day, because of stepped-up military activity in the Pacific, plus the fact that European demand continues at a high rate.

February lumber production, latest

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available, was not much more than 2,100,000 bd. ft., or 14.6% less than in February a year ago.

In a letter to the lumber, plywood and veneer industries, Krug asserted: "WPB will give all the help it can, but it cannot do the job alone. It is necessary for us to call upon the industry to continue its wartime record of all-out effort and to show the same determination which has produced lumber up to this time in the needed amounts, regardless of obstacles."

At the same time, the Commerce Department has pointed out that Canadian lumber manufacturers will be required to supply box lumber for another record fruit packing season. It is expected that sawmills will have to furnish 60,000,000 bd. ft. for this purpose as fruit growers anticipate a repetition of the 1944 bumper crop.

Meanwhile, packers using lumber for boxes are pleased over the stabilization by OPA of dollar-and-cent-additions that may be made to maximum prices for western shook to compensate them for increased lumber costs resulting from use of better-than-box-grade lumber. In adding this cost to maximum prices, the manufacturer must keep monthly records of increased lumber costs.

● **Toy and Game Makers to Get Relief**—WPB action on the request of the toy and game industry for assistance in obtaining fibreboard shipping containers, as well as rubber, lumber and other materials for the production of their products, is expected soon.

● **Metal Strapping Tightened**—Producers packing products in boxes requiring metal strapping are having difficulty in obtaining this material, since WPB removed strapping from the list of items which might be obtained under blanket maintenance, repairs and operating supplies ratings. Now, the items have been added to List B of Priorities Regulation 3 for which an application must be made on Form WPB-541, or other form designated, in order to obtain a rating. However, as noted above, it has been placed on the Production Urgency List, which may result in a production upswing.

● **Overseas Individual Shipping Containers Better**—As a result of a WPB order, families and friends who send packages to service men overseas are now able to purchase sturdier fibre boxes for their gift shipments. In an amendment to Limitation Order L-317, changes were required in size and makeup of "overseas shipper" fibre containers.

Besides changing dimensions of shipping boxes, the WPB declared that the new carton must have full inside and outside flaps and that packing instructions for the public must be printed on the outside of the cartons. These instructions include for the shipper a notification to make a list of the contents and place inside the box together with complete names and addresses, a direction to tie the box securely with four separate pieces of heavy twine, knotted at all crossings and advice to tape seams on top and bottom where outer flaps meet.

● **Sheet Suppliers Cut Back**—During the current period and through June 30, sheet suppliers who purchase and convert containerboard for sheet plants are restricted to 69% of the total tonnage of all grades of containerboard accepted pursuant to extensions of orders under paragraph (c) of M-290 in their acceptance of linerboard. After June 30, it is expected that some of the controls may be relaxed.

● **New Pulp Source**—Makers of shipping containers are looking into the possibilities of pulp made from cotton stems. WPB has reported that these stems, ordinarily left standing in the fields after cotton harvest, "can be processed into a very good corrugating medium for shipping containers. . . . No new types of machinery are needed to digest the pulp or refine it." The report came from the Office of Production Research and Development.

● **Return Empty Cylinders**—WPB officials are urging dealers, distributors and owners of air conditioning and refrigerating systems that they should do everything in their power to assure the prompt return of empty gas cylinders—particularly those used for Freon gases. If such containers are not returned promptly, WPB said, there is a possibility that a shortage may develop that will seriously affect shipments.

● **Lead Supply Situation Drastic**—With estimates of responsible government agencies predicting that lead supply, including imports of refined lead, will be from 25,000 to 30,000 tons short of requirements during the current quarter and perhaps even shorter in the third quarter of 1945, makers of containers requiring lead, even those needed for essential packaging to prevent corrosion, are living in apprehension over who will get "cut off" first from the dwindling supply.

● **Tinplate for Essential Food Production Assured**—Packers of canned vegetables and other foods essential to military and other requirements are continuing to make plans to go ahead with their packs on the basis of the WFA assurance that there will be an adequate supply of tinplate for crops called for in the food-production goals. Canning vegetable acreage goals for this year are 5% larger than 1944 and 46% above the 1935–39 average. WPB Order M-81 controls uses of tinplate and it was under this that supplies for canning vegetables and other perishable foods were assured.

● **WPB Not Happy over Waste Paper Collections**—Although the first four months of the year showed a decided upward trend in collections of waste paper throughout the country (April was the highest month since the campaign began, with 640,000 tons), WPB officials in charge of the drive assert that "inventories of waste paper do not reflect the increased receipts, since the demand for paper products has kept consumption abreast of receipts." To offset any lag in public interest in waste paper collections, WPB is moving ahead with prepared plans for special "summer" drives.

Unless collections are maintained at around 600,000 tons per month, demands for shipping materials to the armed forces will not be met.

● **Of Interest to Note**—Container manufacturers received 3,696,000 tons of steel in 1944, about 6% of the total production, compared with some 3,574,000 tons in 1943.

Quota restrictions on the use of zinc for the manufacture of home canning closures in the second and third quarters of 1945 are limited to no more than 30% of the weight of zinc used by a manufacturer for a similar purpose during the base period—1 October 1940 through 30 September 1941, WPB says.

● **Washington Brevities**—Bureau of Mines has urged the war-expanded steel industry of the Western states to engage in an aggressive marketing program to develop outlets for more steel products and to capture markets previously supplied by eastern plants. Light rather than heavy steel products offer the best opportunity for expansion, the Bureau says, adding that "the market for steel in tinplate and tubular goods manufacture is substantial."

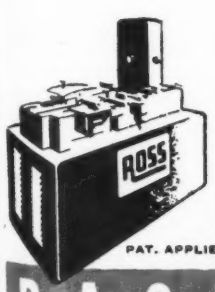
Users of textile bags were benefited by establishment by OPA of a ceiling price of ten cents on all sales by either wholesalers or retailers of new empty military sand bags, now being sold by the Government for civilian use.

WPB is considering an amendment to Conservation Order M-221 which would further regulate the percentage of cotton fabrics for textile bags that bag makers would be permitted to accept from mills under the order.

A Bureau of Mines circular describes "Paligorskite," a type of asbestos frequently called mountain leather, which has characteristics that make it, when wet, readily convertible to a pulp in paper mill beaters and formed into innumerable lightweight and fireproof products. The mountain leather is found on an Alaskan island.

An economical operation

Economy of operation is the purpose behind every ROSS Automatic and Semi-Automatic adjustable packaging machine. Experience from our exceptional War Record has been along the lines of high precision parts for close tolerance . . . thus the new ROSS packaging machine is composed of standardized, high precision parts — no oiling, all moving parts self oiled. Speedy, versatile adjustability thru precision dial controls. ROSS automatic and semi-automatic machines have Master Speedrangers giving speeds from 40 to 120 a minute or greater. Look to ROSS for assistance in your packaging problems. Write for complete information.



A. H. ROSS Co. LUDLOW · KENTUCKY

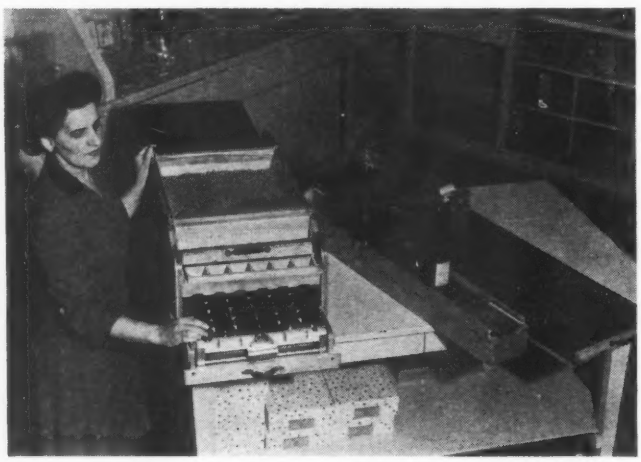
PACKAGING MACHINERY

Equipment and Materials

TABLET COUNTING AND PACKAGING MACHINE

"The "Otta-Matic Tabulating and Packaging Machine" manufactured by C. L. Ottaway Manufacturing Co., Monrovia, Calif., counts and fills coated or uncoated tablets, capsules and perles rapidly and accurately into bottles, vials, boxes, cartons and bags. The unit is designed to handle small packaging operations and is custom-built in exact accordance with the prospective user's needs and specifications.

The machine, as shown, includes one adjustable bottle rack



and counting board. The rack has a 36-bottle capacity and will hold a 5-oz. container or smaller. Odd shaped bottles such as A, B, and CC Rounds, French Squares, etc., are easily accommodated in this unique device. The counting plates are constructed of masonite treated with a synthetic resin for purposes of sterilization.

Standard machines are 32 in. long, 16 in. wide and 12 in. high, constructed of laminated wood, strongly reinforced to hold perfect alignment at all times. The floor of the box is covered with plate glass, giving assured sanitation and a smooth surface for operation of the counting plate. In addition this is said to prevent breakage of uncoated tablets. Hand-sewn brushes in front and rear are adjustable on springs. Accuracy is assured by an adjustable control placed at one side of the machine, which holds the bottle racks in proper position at all times. A large metal funnel is attached at the rear of the machine, for unloading surplus tablets.

PETROLEUM WAX FOR FOOD CONTAINERS

Light-colored laminating wax, useful in producing moisture-resistant food containers, is now available from the Witco Chemical Co., Chicago, without allocation. The new product, known as Hamp Wax No. 62, has been formulated by the company's laboratory to provide low moisture transmission and good grease-resistance qualities. It is a non-resinous, straight petroleum wax, light in color, with a melting point of 160–165 deg. F. It is claimed to have excellent laminating properties suitable for the production of food containers, paper boxes, and Grade "C" Ordnance Wraps. The wax is packaged in 90-lb. fibre containers as well as tank car lots.

IMPROVED INK MARKING POT

A new patented marking pot, constructed with two rotating wooden rollers which convey the liquid marking ink from the bottom of the closed metal container to the top roller and then to the stencil brush, has just been announced by Adolph Gottscho, Inc., New York City. Because of this two-roller construction and since the lower roller reaches almost to the bottom of the pot, it is possible to bring up and use almost the very last of the ink supply, resulting in a marked saving. This "Ink Fast" marking pot is $3^3/_4$ in. in diameter by $2^5/_8$ in. high, light in weight and has an ink capacity of 12 oz. The cover has the two roller assembly attached, and this is easily removed for filling and cleaning.

NEW LIQUID PLASTICS

The United States Rubber Co., New York City, has announced the development of a new family of liquid plastics known as Vibron resins. The company states that these resins may be combined with fabrics to make an improved type of artificial leather; with wood veneer to form decorative structural panels and with paper for diverse packaging materials. The versatility of the material was emphasized by plastics engineers at the company's laboratories, where these resins were developed. The Vibrons are currently being produced for war purposes by the company's chemical division.

WINDOW DISPLAY CATALOG

Texkraft Sales Co., New York City, now has available its window display catalog which includes many new and interesting items with wide application. Copies are available by writing direct to the company.

PACKAGES SEARCHED BY X-RAY

Westinghouse Electric & Mfg. Co.'s X-ray sets are now being used to examine packages mailed to public personages and others needing protection from "cranks" and fanatics.

SYNTHETIC RESIN COATED FABRIC

A luxurious leather-like appearance plus scuff- and crack-resistance, are features of the new synthetic resin-coated fabric just introduced by Athol Manufacturing Co., Athol, Mass. This product, a wartime development, will not be available for commercial use until after the war, at which time it may find use as fancy box covering.

MATERIALS HANDLING EQUIPMENT

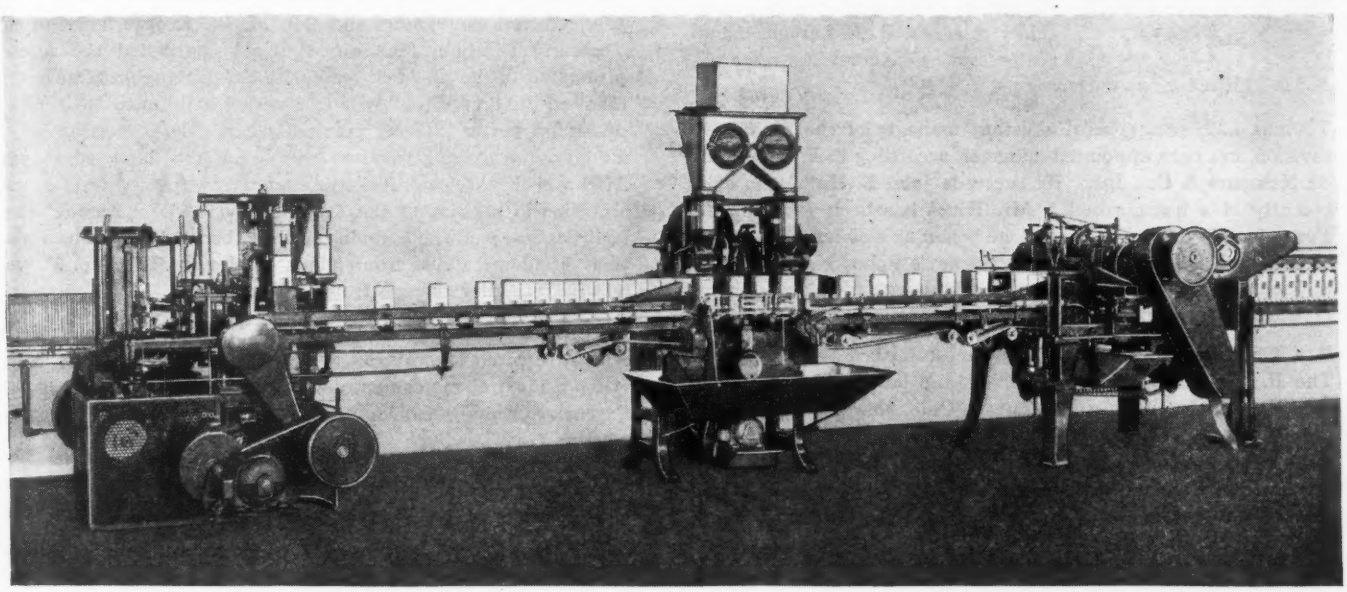
Loaded bins containing such material as paper "trim"—which has high salvage value—may be easily and quickly handled by a high-lift platform truck. The Elwell-Parker Electric Co., Cleveland, Ohio, states that its trucks manually push large loaded bins to the plant's platform where their loads are transferred by hand to road trucks. The loaded bin can be elevated to any height and when its hinged front is dropped, most of the load slides of its own weight into the body of the road truck. The application indicates the adaptability of electric power trucks to many other tasks which entail the handling of light, but fairly large loads.

The Market Forge Co., Everett, Mass., has developed a new standardized running gear for heavy duty industrial trucks. With only two types of wheel supports, six distinct types of trucks can now be made. These include level or non-tilt type trucks and a tilt type with one swivel caster on each end. Supplying your own deck, either of wood or fabricated steel, any length or width may be obtained with the same standardized running gear. Large wheels are 12 in. in diameter by $2^1/_2$ in. face; caster wheels are 8 in. in diameter by 2 in. face. Maximum capacity of 5,000 lbs. is assured. Anti-friction bearings are standard in all wheels.

"PNEUMATIC"

the name that means Lower Cost Per Container

PACKAGING EQUIPMENT



CARTON FEEDER—BOTTOM SEALER TWO SCALE WEIGHER TOP SEALER

HERE is a Pneumatic four-machine hook-up that's a winner every time when it comes to packaging common everyday household items in printed seal-end cartons.

Ruggedly constructed and noted for their operating efficiency these Pneumatic machines (Carton Feeder, Bottom Sealer, Two Scale Weigher and Top Sealer) are in daily use throughout the country handling numerous products such as: peas, beans, rice, sugar, naphtha flakes, spices, salt, water softener, soap powder, cornstarch, macaroni, flour, gloss starch, cracker crumbs, washing powder, barley, tea, coffee, baking powder, etc.

The packaging installation pictured above is rated at 25 to 35 packages per minute. Being readily adjustable, it is entirely practical to run a variety of products and a range of carton sizes on these fully automatic machines.

Important to you, as users will verify, is the fact that all these features add up to *Lower Cost Per Container*. You'll find it pays to consult Pneumatic whenever you have a packaging problem. Expert advice from our staff of experienced and qualified engineers is yours for the asking. Pneumatic Scale Corporation, Ltd., 82 Newport Ave., North Quincy 71, Mass. San Francisco, New York, Chicago, Los Angeles

★ ★ ★ 1895 FIFTY YEARS OF PROGRESS 1945 ★ ★ ★

PNEUMATIC
PACKAGING AND BOTTLING
MACHINERY

Plants and People

S. L. Flugge

S. L. Flugge, formerly manager of manufacturing research in **Continental Can Co.'s** research department, has been appointed director of container research. Mr. Flugge assumes the post previously held by **C. E. Maier** who has been named assistant to **Paul E. Pearson,** vice-president in charge of equipment development and research. The newly re-organized container research division now comprises three subdivisions: manufacturing research service, **J. A. Kissinger,** manager; metallic container research, **R. A. Larson,** manager; non-metallic container research, **F. L. Minnear,** manager.

Thomas L. Hines, general assistant manager of the cellophane division, has been appointed manager, according to **E. I. du Pont de Nemours & Co., Inc.** He succeeds **John E. Hatt,** who died recently of a heart attack. Mr. Hines has been with the du Pont company since 1915 when he began as assistant supervisor of the smokeless powder plant in Carney's Point, N. J. **Robert L. Richards** will continue as assistant manager of the cellophane division under Mr. Hines.

B. F. Goodrich Chemical Co. has been established as a division of **The B. F. Goodrich Co.** with offices and laboratories in Cleveland, O., and manufacturing plants in Ohio, New York and Kentucky. The new division is engaged in the manufacture and sale of the company's line of Geon vinyl resins, chemicals and synthetic and reclaim rubbers. **William S. Richardson** is president of the new company.

The men and women of the war products division of **Milprint, Inc.,** have been awarded the Army-Navy "E" for excellence in production.

The name of **The Rogers Paper Mfg. Co.,** Manchester, Conn., has been changed to the **Rogers Corp.**

N. Stanley Ross has been appointed vice-president and divisional sales manager for the **Pneumatic Scale Corp.,** Quincy, Mass., and is in charge of the Chicago branch office.

The **River Raisin Paper Co.,** Monroe, Mich., received the Army-Navy "E" award on April 23.

The Continental Can Co. has announced the opening of its tenth plant for the production of paper containers. The newest addition is located in Watertown, N. Y., and is engaged in the manufacture of fibre containers. The company has also announced the addition of **James J. Harris** and **Raymond L. Klackle** to its research department.

The following changes were made in Continental's personnel: **A. P. Shacklock,** formerly acting factory manager of the Oakland plant, has been appointed plant manager of Warwood No. 21 (Wheeling, West Va.), following the resignation of **H. L. Humphrey. L. V. Hare** has been appointed assistant plant manager of No. 16 in Baltimore following the resignation of **J. Coyle, Jr.** He will also retain supervision of plant 16A. **L. R. Clark** has been appointed Eastern division manager of industrial relations to replace **J. E. Newsome,** who has been named assistant manager of industrial relations. **D. C. Statler,** formerly local sales manager of Continental's Memphis office, has been transferred to St. Louis where he will act as sales officer manager. **J. C. Krech** will handle all sales in the Memphis area as sales representative reporting to **J. M. Porter** in New Orleans.

Food Machinery Corp., has purchased the **Dayton-Dowd Co.,** an independent pump company in Quincy, Ill., and will make it a branch of its **Peerless Pump** division of Los Angeles under the direction of **Clarence M. Frazier,** vice-president. **Henry J. McKenzie,** who has been assistant manager of Peerless, has been named manager of the new branch.

The attention of military and civilian leaders was occupied recently with the problems of ammunition packing, based on the results of inspection in the field, at a two-day conference held at the **Picatinny Arsenal,** Dover, N. J. Present were representatives from the Office of the Chief of Ordnance, District Ordnance offices throughout the country and the office of the Field Director of Ammunition, St. Louis. **Col. W. E. Larned,** commanding officer, greeted the visitors and **Col. M. W. Kresge,** chief of the Technical Division, Picatinny Arsenal, contrasted the accomplishments of the past two years with the packing program which followed the first World War and varied little until 1943. Emphasis on better packing resulted when a large percentage of ammunition arriving overseas was found too damaged to use. After Col. Kresge's address, the conferees witnessed tests of ammunition in packing at the Arsenal laboratories. Among other facilities was seen the humidifying chamber which permits variations of temperatures from minus 68 deg. to 185 deg. F. and relative humidity changes from 10% to 100%.

Dr. Charles Allen Thomas, director of **Monsanto Chemical Co.'s** central research laboratories at Dayton, O., has been elected a vice-president of the company and will become a member of the Executive Committee on Sept. 1.

Josephine Von Miklos, industrial designer, has moved her studio and work-shop from 200 W. 57th St., New York, to New Canaan, Conn.

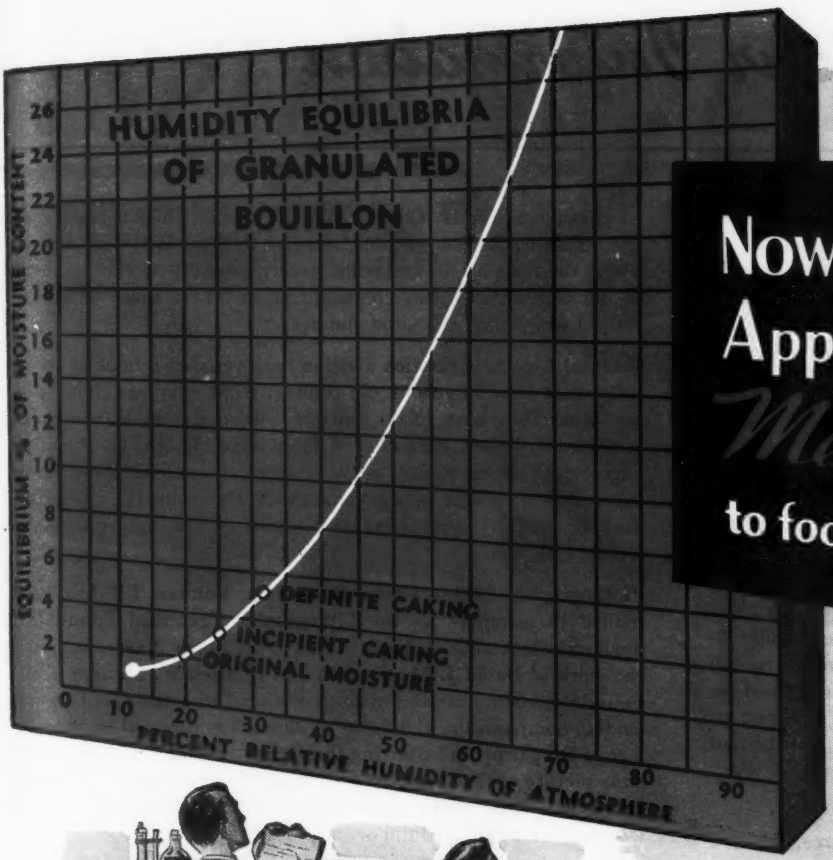
One of the most progressive advertising art programs to evolve in this country was shown recently at the **Art Institute of Chicago.** Ninety-five original advertising designs by 40 artists, many of whom have world-renowned names, were exhibited in both the original water colors and the finished advertisements. These advertisements were all commissioned by the **Container Corp. of America. Walter P. Paepcke,** president of the company, wrote of part of the exhibit: "The artist and the business man should cultivate every opportunity to teach and supplement one another, to cooperate with one another, just as the nations of the world must do."

Don Budge, for the past five years assistant manager of the wrapping paper department, executive headquarters, **Zellerbach Paper Co.,** has just been appointed regional distributor for **Better Packages, Inc.,** of Shelton, Conn., for the seven Western states. In his new work Mr. Budge will make his headquarters in San Francisco and will establish service and parts depots both in San Francisco and Los Angeles for the tape dispensing equipment in which this company specializes.

Frank E. Irsch, Jr., recently a captain in the Chemical Warfare Service, has been placed on the inactive list by the War Department and has joined **The Gardner-Richardson Co.** as a member of the sales offices in New York.

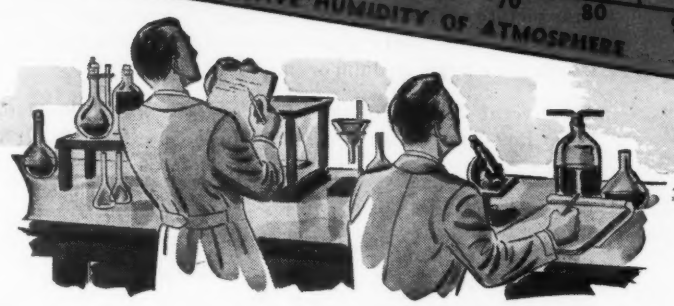
The employes of the **American Machine & Foundry Co.** were presented the Army-Navy "E" on March 31.

With a desire to extend the usefulness of its service to container customers, **The Foster-Forbes Glass Co.** of Marion, Ind., has purchased all of the stock of the **Demuth Glass Works, Inc.** with plants located in Brooklyn, N. Y., and Parkersburgh, W. Va. The Demuth Glass Works will (*Continued on page 164*)



Now MARATHON Applies Scientific *Measurement* to food package protection

The humidity equilibria curve of a product that absorbs moisture rapidly in the lower ranges of humidity, and shows definite caking at a relative humidity of only 30%.



Marathon's technical departments are equipped with the finest laboratory instruments to provide complete facilities for scientific packaging studies.

THE application of humidity equilibria studies to food packaging protection is another step pioneered by Marathon. Here is a thoroughly scientific approach to the problem of food packaging, applying a standard method of measurement of the kind and degree of protection needed to preserve product quality and flavor. This and other tests guide Marathon engineers in designing a package from the correct materials to maintain original product characteristics against all hazards of the factory-to-consumer journey. Marathon's scientific tests remove much of the guesswork from package building — first predetermining the protective demands of your product, then testing and retesting the package to make certain it meets your marketing requirements.

MARATHON CORPORATION
MENASHA, WISCONSIN

MARATHON

BUILDS PACKAGES FROM A COMPLETE RANGE OF PROTECTIVE MATERIALS

PAPER
PAPERBOARD
CELLOPHANE
LAMINATIONS
COATINGS
FILMS
FOILS

For Your Information

In view of Victory in Europe and the possible lift of the ban on conferences and conventions, the **Packaging Institute** has appointed a committee to set the date for a meeting this year. The dates selected are **November 26, 27 and 28** at the Commodore Hotel in New York City. A letter sent by **Walton D. Lynch,** president, to all the members reads in part, "We all know the very great value of a conference among the members of the Packaging Institute, particularly during these turbulent times."

Mr. Lynch goes on to say, however, that if the ban is not lifted, naturally, no such meeting can take place.

The first edition of **"Taffel Tales"** published by **Taffel Bros.,** manufacturers of ribbons, attracted so much attention from the gift field back in 1938 that it was decided to publish a 1945 edition to bring the subject up-to-date. In keeping with these busy times, "Taffel Tales" employs the picture magazine technique with photographs and a few well-chosen words to tell its story. Requests were sent to all gift manufacturers and retailers for photographs of their best packages and the best of these have been reproduced. Copies of the booklet may be had upon written request to Taffel Bros., Inc., 95 Madison Ave., New York 16.

A booklet prepared by the **U. S. Dept. of Commerce,** entitled **"The Businessman's Bureau"** provides a ready reference on what the Bureau of Foreign and Domestic Commerce offers today's businessman. It is designed to acquaint those it serves—American private enterprisers—on how their Businessman's Bureau functions and to point out some of the major results of its endeavors. Copies may be had by writing the department at its Washington headquarters.

The **J. L. N. Smythe Co.** of Philadelphia have just brought up-to-date and reprinted an article by its sales manager, **W. Clifford Haines,** titled **"Wrapping Metal Parts and Assemblies for Overseas Shipment."** It gives a basic knowledge of the three methods of packaging and the best ways to achieve each. Packaging men interested may obtain copies by addressing the company at 1600 Callowhill St., Philadelphia 30.

Fresh sea food and cooked shrimp are being air expressed from Charleston, S. C., and Savannah, Ga., to Atlanta at substantially reduced rates according to the **Air Express Division of Railway Express Agency.** According to the new rate schedule these commodities travel at 6 cents per pound, making a reduction of $4\frac{1}{2}$ cents per pound on the tariff formerly in effect. A minimum of $1.00 per shipment, however, will be continued according to Railway Express agency officials.

At a recent meeting of the **Chicago Packgaging Club, A. L. Green,** special representative freight claim division, **Assn. of American Railroads,** gave a talk illustrated with slides showing freight damage and its causes. Mr. Green cited figures of roughly $65,000,000 worth of railroad freight damage in 1944. Faulty practices of both shipper and carrier were discussed indiscriminately. The club, formed last September, is headed by **C. Stewart Macnair.**

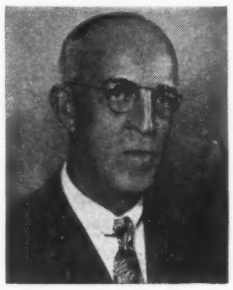
The **Flexible Packaging Institute** is increasing its mailing pieces since packaging shows are off. The latest, is a piece which shows the job done by flexible packages during the war and gives a hint as to what they can do come peace. For further information on the subject address the Institute at 369 Lexington Ave., New York 17.

"Where Jobs Come From" is the title of a new booklet published by **General Foods Corp.** Eight historic illustrations show graphically how American enterprise and initiative made jobs where there were none and point to the postwar period when it will be up to the American businessman to create more and more jobs in very much the same manner.

General Electric's plastics division has prepared a booklet which tells what these divisions did prewar, what they are doing now and what they plan to do postwar. To a company confronted with any problem encountered in plastics design, G. E. offers engineering advice as well as the services of manufacturing plants located in strategic spots throughout the country. Booklets may be had by addressing the company, 1285 Boston Ave., Bridgeport, Conn.

"Lithographic Offset Press Operating, Volume I," has been mailed to members by the **Lithographic Technical Foundation** during the last week in April. This new 72-page book is basically the work of **David J. MacDonald** and **Charles W. Latham** of the Foundation educational and employee staff with the aid of several leading companies in the field. Volume I is devoted to the subject of **Preparing and Starting the Press.** Its aim is to present a clear picture of the general preparations and necessary steps to be taken before actually running any lithographic offset press whether in a large, medium or small shop.

At a recent meeting of the board of directors of the **National Paper Box Mfgrs. Assn.,** held in Atlantic City, N.J., **A. M. Bond** of the **Consolidated Paper Box Co.,** Somerville, Mass., was elected president, succeeding **Walter P. Miller, Jr.** of the **Walter P. Miller Co.** Other officers are: **Arthur H. Kroeck, Kroeck Paper Box Co.,** vice-president; **Henry J. Aemisegger, G. A. Bisler, Inc.,** treasurer; **William R. Kreeger,** secretary. The meeting was attended by the members of both the postwar development committee and the advertising committee of the association. Both committees were given financial appropriations for the continuance and expansion of their respective duties.

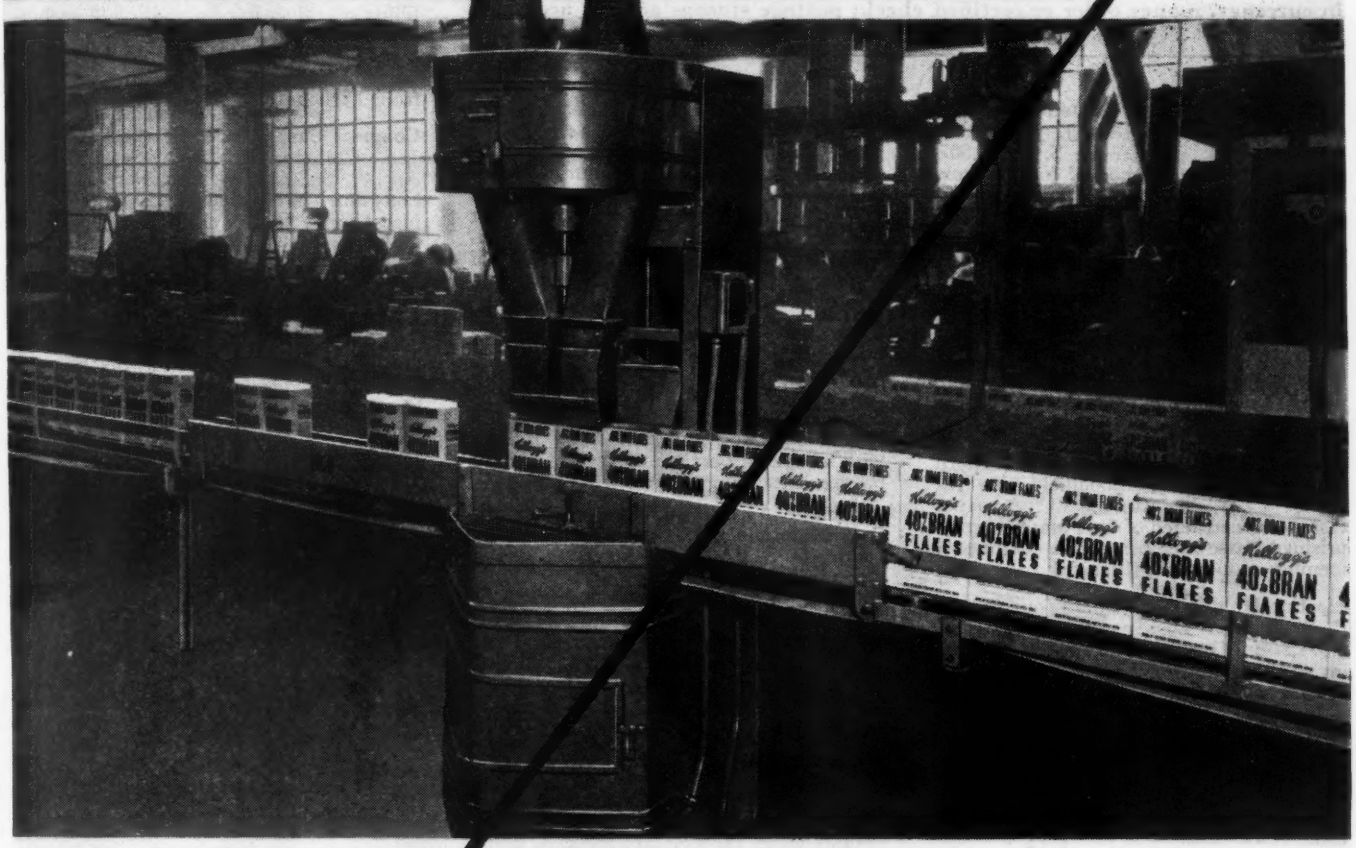


A. M. Bond

Although 60% of all rail freight in 1944 was "war freight" only 10% of the damage claims filed were on this freight, illustrating that packaging of war goods has been handled creditably despite container shortages and other difficulties. These facts were pointed out by **A. L. Green,** special representative, **Assn. of American Railroads,** in a speech before the members of the **Industrial Engineers Assn.** of America at the groups April meeting in Chicago. Methods of stowing bombs, guns and other military items for rail shipment were described in an illustrated talk by **Rexford Keyes,** chief, loading specifications section, **Chicago Ordnance District.** A motion picture, **"Carloading Tests on Shipments of Small Arms Ammunition,"** was followed by a discussion period with Mr. Keyes and members of a guest panel answering questions.

The fourth annual edition of **"A Basic Marketing Chart of the United States"** has just been released by the **Research Co. of America.** This new chart contains data on vitally important phases of advertising and marketing for each state and geographic division in the country. It answers many questions pertinent to postwar sales planning such as: How has the civilian population shifted? What is the income of Americans? How much income tax do they (*Continued on page 166*)

.. SPEED. . . EFFICIENCY ..



.. LOW COST OPERATION

Packomatic's goal for Kellogg's

You, too, may have a packaging situation similar to Kellogg's—where the goal of production is to give the consumer the absolute maximum of taste, flavor and nutrition in a food product—*at the lowest possible packaged cost.*

PACKOMATIC helps Kellogg attain its goal with *Automatic Volumetric Fillers,* as pictured above. . . . Designed for a wide range of fairly large packages—88 to 227 cu. inches, PACKOMATIC also builds *Automatic Volumetric Fillers* for 15 to 150 cu. inch packages.

Intended primarily for free-flowing or nearly free-flowing dry products that can be volume-measured, PACKOMATIC'S *Automatic Volumetric Fillers* are ideally suited for the packaging of puffed cereals of all kinds; flaked cereals; granular cereals such as cracked corn meal, Cream of Wheat, Farina, etc. . . . Legumes, such as split peas, navy beans, lima beans, etc. . . . Small candies. . . . sugar . . . gelatin powders. . . . Also soap and water-softeners, powders and cleansers of nearly all kinds . . . and innumerable items of similar size, texture and bulk.

Automatic Volumetric Fillers are but one of PACKOMATIC'S many production-proved set-ups for carton-filling, case-handling, dating, imprinting, etc. *Details on request . . . no obligation.*

PACKOMATIC
PACKAGING MACHINERY
J.L. FERGUSON CO. JOLIET, ILL.

Submit your packaging project to PACKOMATIC. Consult your classified telephone directory for the office nearest you, or write direct to Joliet—assured that PACKOMATIC'S years of pioneering packaging design and development experience are available to help you plan to meet tomorrow's competition.

NEW YORK • CHICAGO • BOSTON • CLEVELAND • DENVER • LOS ANGELES • SAN FRANCISCO • SEATTLE

U. S. patent digest

This digest includes each month the more important patents which are of interest to those who are concerned with packaging materials. Copies of patents are available from the U. S. Patent Office, Washington, at ten cents each in currency, money order or certified check; postage stamps are not accepted.

Method of Covering Containers, H. J. Arena, Hudson, N. J. & J. J. Virgona, Cliffside Park, N. J. U. S. 2,371,667, March 20. The method of forming covered breakable ampoules one after the other into a length of prefabricated hose composed of inner hose consisting of an absorbent material and outer hose of porous material.

Cone Jacket Applying Machine, J. Balton (to Maryland Baking Co., Inc., Baltimore, Md.). U. S. 2,371,668, March 20. A machine for locking jackets onto cones and means to discharge the jacketed cones from the machine.

Paper Fastener, J. C. Brown (to Eastern Tool & Mfg. Co., Bloomfield, N. J.). U. S. 2,371,800, March 20. A paper fastener constructed of fibre material comprising a base member and a compressor member cooperating therewith.

Lipstick Holder, J. DeSwart (one half to C. B. Jamison) Los Angeles, Calif. U. S. 2,371,808, March 20. A holder comprising a tubular housing having a longitudinal slot through its side wall.

Package Wrapping, H. B. Tuthill & H. F. Caldwell (to Oliver Machinery Co., Grand Rapids, Mich.). U. S. 2,371,858, March 20. The method of wrapping cylindrical articles having opposite substantially flat ends which consists in providing a wrapper member of thin material rectangular in outline and of a size such that marginal portions of the wrapper member extend beyond the exterior curved surface.

Tape Moistening Device, A. Burckhardt (to Pitney-Bowes Postage Meter Co., Stamford, Conn.). U. S. 2,371,871, March 20. In a gummed tape moistening device, a moistening member having a liquid moistening surface disposed in the path of tape issued from a tape issuing device.

Adhesive Starch Composition and Method of Making Same, J. E. Fenn (Stein, Hall & Co., Inc., a corporation of New York). U. S. 2,372,666, Apr. 3. An adhesive starch composition in which a proportion greater than 55% of the starch content is in enzyme converted form and in which a lesser proportion than 45% is ungelatinized with metal chloride pasting inhibitor.

Package Container, G. H. Bugenhagen, Midland, Mich. U. S. 2,372,708, Apr. 3. In a container for a package of merchandise adapted to be opened at will by compressive lateral pressure on one end thereof for the removal of merchandise from the package the combination including first and second tray-shaped members each divided into two sections by a fixed partition parallel to the ends of the member.

Plastic Bottle Cap, O. A. Koehler, San Antonio, Texas. U. S. 2,372,725, Apr. 3. A crown bottle cap comprising a crown cap, a plurality of fingers extending from the edge of said cap and a ring integrally secured over the ends of at least some of said fingers, said fingers being curled partially about said ring when said cap is in unsealed position.

Cylindrical Container, W. A. Ringler (to the Gardner-Richardson Co., Middletown, Ohio). U. S. 2,372,740, Apr. 3. A container body having a cylindrical shape and projecting abutment means at an end and extending outwardly peripherally at said end, and an end piece for said container body comprising a circular sheet of boxboard with its peripheral portions in upturned loosely crimped condition.

Apparatus for Moistening Gummed Articles, Com. D. Ryan (to Commercial Controls Corp., a corporation of Delaware). U. S. 2,372,742, Apr. 3. In a blade for moistening the adhesive portion of envelope flaps, said blade being formed with a tapered portion and having a fluid passage extending along taper of blade.

Automatic Apron Fed Hopper Scale for Bulk Materials, A. J. Stock, Rocky River, Ohio. U. S. 2,372,746, Apr. 3. A solid material handling device comprising a substantially dust-proof housing having closed sides and ends and having its top closed excepting for a material inlet, and its bottom closed excepting for a material discharge opening.

Container Fastening Means, P. Zailkind, New York, N. Y. U. S. 2,372,805, Apr. 3. A folding container of sheet material comprising two parallel walls united with each other through structural means; a metallic member at the edge of each of said parallel walls, each of said metallic members having an upturned flange having a line of slots therein, metallic members having bayonets for registering with said slots, and means for locking bayonets in.

Wall Connection for Collapsible Containers, P. Zalkind, New York, N. Y. U. S. 2,372,806, Apr. 3. A pair of panels and a hinged connection therefor; said panels extending substantially in face to face relation, the registering adjacent edges of said panels being in stepped relation to each other, one edge of one panel being stepped inwardly from the adjacent edge of the other panel.

Seal Tag, E. A. Conaway and J. H. Conaway, Chicago, Ill. U. S. 2,372,611, Apr. 3. In a tag a connecting element, a tongue member contiguous therewith, a pocket member contiguous therewith, said tongue member comprising a latch unit having a receipt stub detachably connected thereto.

Match Holder and Matches, N. Levin, Trenton, N. J. U. S. 2,372,836, Apr. 3. (One-half to R. M. Peitzman.) A container comprising a receiving member and a cover therefor, means providing a handle for said cover including a unitary assembly of match splint cards and ignition material, the latter being located on the outer face of an encompassing U-shaped cover for and stapled to the base ends of the cards with the sides of the cover folded back about the staple to uncover a portion of the base ends.

Package of Solder, M. S. Sparks, Memphis, Tenn. U. S. 2,372,859, Apr. 3. An article comprising an inherently ductile strip of material as a wire solder closely coiled helically in a single layer to form a hollow, elongated body.

Container Sealing Means, G. T. Derby, Jacksonville, Fla. U. S. 2,372,885, Apr. 3. A locking and hermetically sealing assembly for a jar closure member.

Bottle Filler and Siruper, J. Kantor (to The Liquid Carbonic Corp., Chicago, Ill.). U. S. 2,372,899, Apr. 3. In a container filling machine, in combination, a carbonated liquid tank, a siruping tank, a filling tube associated with said liquid tank, a valve for controlling the flow of liquid from carbonated tank through tube.

Compact Case. E. S. Michals (to Rho-Jan, Chicago, Ill.). U. S. 2,372,969, Apr. 3. A container comprising a circular body and a circular cover having matching faces, hinge means connecting the body and cover for relative movement into open and closed positions.

Bag Closure, C. V. Brady (to Bemis Bros. Bag Co., St. Louis, Mo.). U. S. 2,373,010, Apr. 3. A bag closure comprising adjacently located multi-ply bag end portion, a layer of low melting point flexible sealing substance covering all faces and inner faces of said plies near the end, a V-shaped covering tape enclosing said bag ends and presenting dry exterior faces, and stitching passing through the top and said bag ends.

Match Book, R. Guyer (to Waldorf Paper Products Co., St. Paul, Minn.). U. S. 2,372,025, Apr. 3. A match book comprising a cover constructed from a single strip of material having lateral edges and folded transversely of said edges to form a reverse side wall, an obverse side wall and an end portion intermediate the side walls, a block of matches constructed from a plurality of overlying sheets of paper slit longitudinally to provide a number of stems having heat at their ends and stubs from which the stems issue.

Mechanism for Dispensing Stacked Articles, LeRoy H. Kiesling, Brooklyn, N. Y. U. S. 2,373,029, Apr. 3. A magazine mechanism for dispensing stacked articles comprising an up-and-down shiftable carriage for the load of stacked articles adapted to yield descendingly with increase of load and vice versa.

Automatic Cream Expender, E. W. Daly, Santiago, Chile. U. S. 2,373,171, Apr. 10. Apparatus for the automatic supply of graduated quantities of semi-liquid materials.

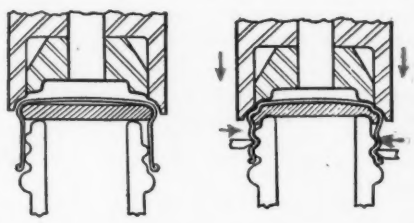
Label and Tape Dispensing Machine, R. S. Avery, Los Angeles, Calif. U. S. 2,373,092, Apr. 10. Dispensing labels from a strip having the labels adhesively mounted in a row on a backing which is divided longitudinally into two ribbons, the method of dispensing the labels which comprises feeding the strip lengthwise along a predetermined path, peeling one ribbon from the strip at one location along the path to uncover a part of the adhesive side of each label.

Container, C. A. Baer, New York, N. Y. U. S. 2,373,285, Apr. 10. A hermetically sealed envelope comprising a rectangular sheet of metal foil provided with a film of rubber hydrochloride secured to one face thereof, substantially one-third of said sheet being laterally folded upon the adjacent portion in edge coinciding relation with said film on the inside.

Bag and Method of Filling Same, H. A. Rohdin, Glen Ridge, N. J. U. S. 2,373,340, Apr. 10. A flexible walled bag having a heat sealable inner surface at least adjacent its mouth, a flexible filling tube extending into said bag, extending longitudinally of the bag and having its outer

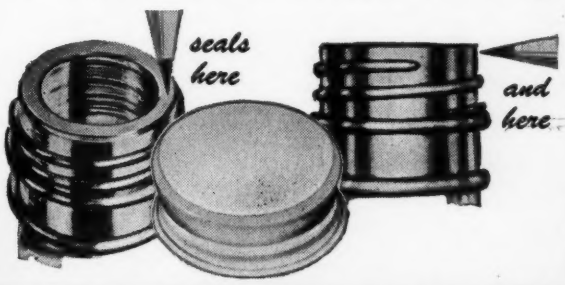
For hard-to-seal-products, try a "TS", the 2-way seal. It seals on both Top-and-Side of the glass finish. Greater protection for a product that volatilizes readily . . . or for an oily product that tried to creep past the seal . . . or a product that develops internal gas pressure. Alseco machines apply the Top-and-Side at speeds up to 300 per minute. A wholly automatic, low-cost operation. Get the whole story now and be all set to use the "TS" when this tighter seal is freely available for civilian packages.

HERE'S HOW THE "TS" WORKS



1. Plain-skirted "TS" is seated squarely on container. Notice how it flares out at the top to accommodate and hold in a liner of extra wide diameter. Liner extends well beyond outer edge of glass finish.

2. Pressure block seats liner uniformly on top of glass and indents a ring in outer edge of cap, forcing liner down around side of glass finish. At same time, threads are rolled on to hold seal securely.



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end extending across said heat sealable urface.

Clasp for Envelopes and the Like, W. P. Cameron, Washington, D. C. U. S. 2,373,380, Apr. 10. A closure fastener for envelopes and the like comprising in combination with a body and a closure flap, said closure flap having an accurate medial opening and lateral elongated slots, and anchor plating having prong elements for securement to the body.

Container and Closure, R. W. Hoag (to Russell & Sidebotham, Melrose, Mass.). U. S. 2,373,397, Apr. 10. A container having a dispensing mouth and neck with an exteriorly positioned head, and a closure for the container comprising a cover element and a double-flat collar for frictionally holding the cover element over the mouth and neck of the container.

Container Handle, J. C. Morris (to The Ohio Boxboard Co., Rittman, Ohio). U. S. 2,373,408, Apr. 10. A container made of paperboard, having a handle member attached thereto by staple means.

Box, F. C. Shina (to United Paperboard Co., New York, N. Y.). U. S. 2,373,423, Apr. 10. A box construction including four side walls, end flaps projecting from said side walls toward an opposed side wall and connected with each respective side wall by a fold line, one pair of opposed flaps constituting bottom flaps and being provided with slits extending from the respective fold line of each flap position to receive respective marginal edges of another flap.

Removable Bottle Cap, B. C. Tate, Brooklyn, N. Y. U. S. 2,373,434, Apr. 10. A bottle cap comprising a crown portion having a flared skirt providing alternating ribs and indentations when crimped upon a bottle mouth.

Folding Metal Chicken Crate, J. F. Lease (one-half to Glee Hanson Barnes, Pico, Calif.). U. S. 2,373,481, Apr. 10. A crate having a bottom wall provided with upturned side flanges and end flanges, end wall disposed between said flanges having U-shaped frames providing downwardly extending bars and latches slidably mounted in connecting bars so as to prevent collapse of crate.

Wrapper for Cigarette Packages, W. G. Vollmer (one-half to H. Haacke, St. Louis, Mo.). U. S. 2,373,524, Apr. 10. A package wrapper formed of material capable of being torn, said wrapper having a straight edge adapted when the wrapper is folded enclosingly around a package to form an exposed margin of a closure flap and being cut obliquely inwardly from said straight edge along a single line, being folded back in triangularly shaped tab for use in tearing open in wrapped package.

Pressure-Sensitive Adhesive Tape, C. L. Wagner (to Marathon Corp. of Wisconsin). U. S. 2,373,634, Apr. 10. Pressure-sensitive adhesive tape comprising a flexible backing sheet of creped paper coated with a pressure-sensitive continuous flexible coating.

Fruit Bagger and Weigher, J. C. Broome, H. D. Carlton (to Food Machinery Corp., San Jose, Calif.). U. S. 2,373,649, Apr. 17. In a bagger and weigher the combination of: a balance beam pivotally supported at its fulcrum on said frame, and having a bag arm extending in one direction therefrom and a weighing arm extending in the opposite direction therefrom, with bag holder on said bag for holding an open bag in position to receive material.

Wrapping Machine, W. B. Bronander, Montclair, N. J. U. S. 2,373,655, Apr. 17. In a wrapping machine, a movably mounted supporting table for receiving articles to be fed and wrapped with stationary top plate above and spaced from said table; means for resiliently moving the table toward the plate.

Carton, T. Meredith (to Colgate-Palmolive-Peet Co., Jersey City, N. J.). U. S. 2,373,701, Apr. 17. As a new article of manufacture a tubular carton which comprises a front, a back, a bottom integral with said front and back having scored section adapted to be easily punctured to form a pouring aperture therein.

Application of Closures to Containers, J. F. Price and I. L. Wilcox (to Oswego Falls Corp., Fulton, N. Y.). U. S. 2,373,708, Apr. 17. A machine for applying closures to containers, which closures are coated with a substance rendered adhesive by the application of heat to make the closure self securing on the containers.

Coating Composition and Method of Making Same, W. J. Rice, Brooklyn, N. Y. U. S. 2,373,709, Apr. 17. A resinous reaction product, a mixture of rosin, tall oil.

Weighing Machine, S. R. Howard (to Pneumatic Scale Corp., Ltd., Quincy, Mass.). U. S. 2,373,381, Apr. 17. In a weighing machine, in combination, weighing means including a scale beam, a weighing receptacle fixedly mounted thereon, material feeding means including funnel to receive measured amount.

Automatic Weighing Machine, A. W. Lindholm (to Pneumatic Scale Corp., Ltd., Quincy, Mass.). U. S. 2,373,838, Apr. 17. A weighing machine including a scale beam, means for feeding material by gravity upon the weighing end of scale beam and supply hopper located above and in direct communication with feeding means.

Coated Foil Closure, A. G. Osborne and T. M. Hill (to Aluminum Company of America, Pittsburgh, Pa.). U. S. 2,373,-847, Apr. 17. A cup-like metal foil closure including a flexible coating adhering to the inner surface of the metal foil.

Bottle Carrier, E. C. Potter (to Container Corp. of America, Chicago, Ill.). U. S. 2,373,851, Apr. 17. A bottle carrier comprising a body portion and a vertically adjustable handle portion movable to stacking and carrying position including sides, a pair of top panels hinged at their opposite edges to the handle and to sides of body, respectively.

Self-Locking Container, M. I. Williamson and V. R. Tantalone (to National Folding Box Co., New Haven, Conn.). U. S. 2,373,730, Apr. 17. A self-locking container, the combination of a tray part and a therewith outwardly telescoping cover part, each said part comprising yieldable sheet material, the cover part being closely dimensioned with respect to the tray part.

Foldable Box, J. H. Scherer (to Brown & Bailey Co., Philadelphia, Pa., a corporation of Pennsylvania). U. S. 2,373,977, Apr. 17. A foldable box with bottom, front, rear and side walls, and a lid hinged to the rear wall, said lid having a lip at its front edge adapted to overlie the upper part of front wall when lid is closed.

Interlocking Container, W. O. Fisler, St. Louis, Mo. U. S. 2,374,005, Apr. 17. A container made of foldable sheet material with front and rear wall members including side flaps extending from opposite sides of front wall member, and provided with a locking tongue.

Carton, W. G. Freel, F. E. Diver, S. F. Jones (to William P. Frankenstein, Cincinnati, Ohio). U. S. 2,374,006, Apr. 17. A display carton formed from a single blank of cardboard comprising a pair of panels of dissimilar area with the larger panel acting as a supporting base for the carbon, and the smaller as a display bed.

Envelope Construction, M. McKeen, Easton, Pa. U. S. 2,374,026, Apr. 17. An envelope construction composed of two sheets of transparent material fused together along three edges of the same to form an envelope receptacle with free closure flaps at the open end thereof.

Combined Bottle Cap and Stopper, C. V. Stevenson, New York, N. Y. U. S. 2,374,143, Apr. 17. A combined bottle cap and stopper comprising a hood constructed of relatively thin stiff sheet material adapted for enclosing the open end of the neck of a bottle.

Basket, J. H. Holtvoigt (to The Dolly Toy Co., Tipp City, Ohio). U. S. 2,374,153, Apr. 17. A basket, comprising a body portion and a handle therefor including a bottom section and integral spaced upstanding slats formed from a single piece of fibrous material.

Hatbox, H. Marienthal, New York, N. Y. U. S. 2,374,160, Apr. 17. A hatbox made wholly of pliable, transparent or translucent material, and composed of side wall whose adjoining edges are loosely overlapping one another, a bottom mounted inside said wall, a plurality of fastening elements between said bottom and said wall distributed around the circumference of the latter.

Wrapping Machine, W. B. Bronander, Montclair, N. J. U. S. 2,374,172, Apr. 24. The method of wrapping an article which consists of disposing an article between contractable parts of article feeding and wrapper forming means.

Container, S. W. Conner, J. R. Neil and P. A. Nemoede (to Container Corp. of America, Chicago, Ill.). U. S. 2,374,177, Apr. 24. A container of the class described comprising, in combination, a rectangular bottom panel, a pair of side wall panels extending substantially vertically upward from two opposite edges thereof, a pair of end wall panels extending substantially vertically from the other two edges with wood cleats of substantial width and cross sectional area on the exterior with top edges flush to top surface.

Ammunition package, N. H. McKay, Washington, D. C. U. S. 2,374,222, Apr. 24. An ammunition package comprising end caps each having a flat portion of undulating contour and having a continuous arched flange adapted to be fitted over a bundle of packages.

Apparatus for Filling Cans and Other Containers, D. W. Bingham, Middle Brighton, Victoria, Australia. U. S. 2,374,268, Apr. 24. Apparatus for filling containers, comprising in combination a feed hopper, a plurality of circumferentially spaced feeding heads mounted upon said hopper to form a rotary filling unit.

Container, M. Habif, Habana, Cuba. U. S. 2,374,346, Apr. 24. The combination of a container having a bottom, a front wall and side walls, the back of said container being entirely open, a cover hinged to the rear ends of side walls and having rear wall projecting down below the pivotal axis of cover point just short of bottom of container.

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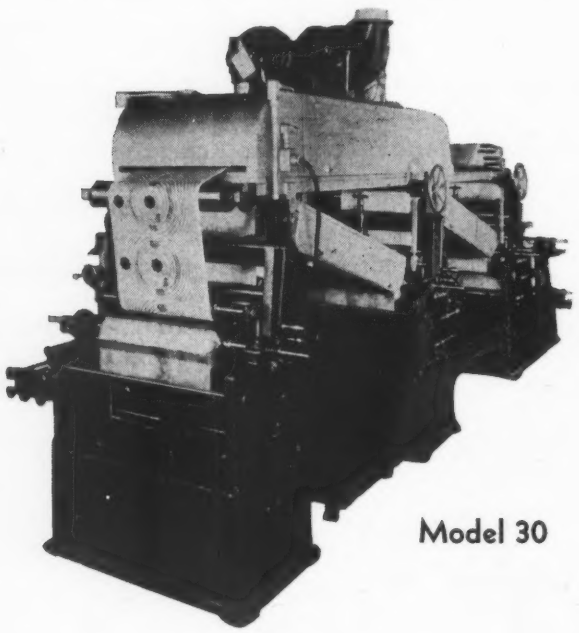

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Plants and people

(*Continued from page 156*) retain its name and operate as a wholly owned subsidiary with **John G. Clarke** as president.

Thomas F. Brennan, formerly manager of the metropolitan New York district of the **American Can Co.,** was appointed a sales division manager in the company's Atlantic division. He will maintain his offices in New York and will manage the non-food division. **Robert Hollister,** Mr. Brennan's assistant, will take over the New York post with **C. J. Heintz** as assistant.

Research offices were opened on May 1 at Scarsdale, N. Y., by **Francis Chilson,** industrial consultant, in addition to his main offices in New York.

W. Irving Osborne, Jr., president of the **Natl. Paperboard Assn.,** the **Hummel and Downing Co.,** Milwaukee, Wis., and the **Cornell Wood Products Co.,** Chicago, has been named deputy director of the **Paperboard Division of WPB.** Mr. Osborne is chief assistant to **Ralph A. Powers,** director of the Division.

The Battelle Memorial Institute has announced the appointment to its staff of **J. Robert Van Pelt,** formerly technical director of The Museum of Science and Industry. Mr. Van Pelt will assume responsibility for the program of research education.

Charles W. Kaufman, formerly director of the processing technology section at **General Foods Central Labs.,** Hoboken, N. J., has been named assistant manager of the research and development department in New York City.

H. Felix Kraus, designer of perfume boxes, bottles and labels has changed his address to **23 W. 47 St., N. Y. C.**

A new plywood distributing unit has been established in Baltimore by the **United States Plywood Corp.** The Baltimore unit, the 17th warehouse in the company's chain, will be managed by **Thomas S. Hauck,** under the supervision of **Charles S. Creigh.**

The following officers were elected for the year 1945–46 at the 40th annual meeting of the **Lithographers National Assn.: Maurice Saunders,** chairman of the board; **Geo. E. Loder,** president; **Geo. W. Hall,** vice-president; **Geo. C. Kindred,** treasurer; **W. Floyd Maxwell,** secretary; **Percival D. Oviatt,** general counsel.

William J. Wardell, vice-president and comptroller of **American Can Co.,** has been elected a director of the company.

G. N. Streit, formerly associated with the Chicago office of **Stein, Hall & Co., Inc.,** has been appointed manager of this company's newly expanded Detroit branch office. Mr. Streit's staff includes **M. F. Hunt,** covering the general line; **R. Swint,** specializing in products for the food industry; **E. B. Taylor,** handling general adhesives and paper mill materials; **H. J. Jones,** contacting manufacturers of corrugated board in the interests of Stein-Hall starch process.

A creped wadding sales office has been opened by **Kimberly-Clark Corp.** in Atlanta, Ga. The manager in charge is **R. V. Bellmore.**

Alfred Channon Fincken, senior partner and founder of **A. C. Fincken & Co.,** manufacturers of food products, Gloucester, England, died on March 30.

Phillip H. Dobbs, sales representative in the display and specialties department of **Bulkley, Dunton's** New York office, died recently at the age of 41.

Robert M. Sanford, manufacturing superintendent of **Monsanto Chemical Co.'s** plant at Monsanto, Ill., died on April 24 of a heart disease.

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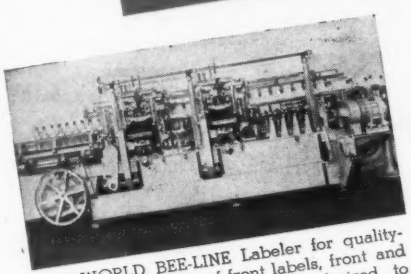
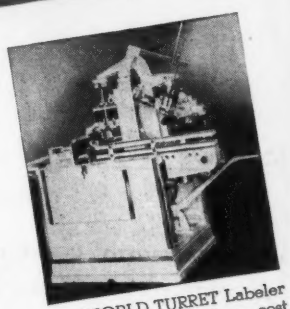
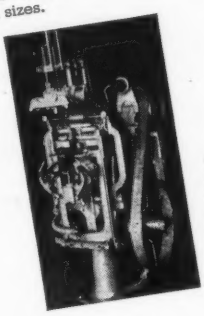


The WORLD BEE-LINE Labeler for quality-quantity application of front labels, front and back labels, and neck labels if desired, to round, square, flat, oval or panel containers of all kinds and sizes.

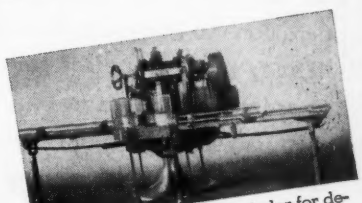


The WORLD TURRET Labeler for high quality, low cost labeling on smooth, fluted or fancy containers.



The WORLD Semi-Automatic Labeler Model S, for applying body labels, neck labels, foil, all-around labels, to any size container from ampoules to gallons.

WORLD LABELERS



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For your information

(*Continued from page 158*) pay? What are the sales of war bonds and life insurance? What is the industrial output in wartime compared with prewar? The chart is for sale at $2.50 and can be had from the company, 341 Madison Ave., New York 17.

The Hercules Powder Co. has printed a booklet in handy reference format entitled **"A Chronology of Papermaking in the United States."** Because of the interest and importance of this material which first appeared as a two-part article by **Harry E. Weston,** in *The Paper Maker*, Hercules decided to reproduce it in its entirety. Copies may be had by addressing the company in Kalamazoo, Mich.

The Paper Shipping Sack Mfgrs. Assn. has published its **General Manual No. 1,** which gives complete information on the use, handling, storage and care of paper shipping sacks. Copies may be had for 25 cents from the association at 370 Lexington Ave., New York 17.

John Waldron Corp. has just released its **catalog No. 118, "Waldron Laminating Machines,"** which gives a general background knowledge of the process of laminating and show the various machines and methods used. Copies are free of charge.

The Taber Instrument Corp. has just published a booklet on its new abraser tester which explains concisely the range of application of the abraser and how it can be applied. Copies may be had by addressing the company in North Tonawanda, N. Y.

Members of the **Anglo-American Packaging Committee** met at the **Transportation Club** in **London** recently to exchange information on packaging procedures and procurement of technical materials for the Armed Forces.

The American Can Co., at the request of the **Quartermaster Corps,** has prepared and published a revised edition of its brochure, **"The Procoating of Processed Food Containers."** The purpose of the booklet is to assist the Quartermaster Corps and canners in constructing and operating equipment for coating export food containers.

Herman L. Brooks, President of Coty, Inc., has been re-elected president of the **Toilet Goods Assn.** for the 10th consecutive time in a mail election just recently concluded. Other officers are: **Paul H. Douglas, William M. Bristol, Jr.,** and **H. P. Willats,** vice-presidents; **Paul F. Vallee,** treasurer; **Joseph Keho,** secretary; **Dr. Mark W. Tapley,** vice-chairman of the scientific section. The executive board of the association voted to retain the following staff: **S. L. Mayham,** executive vice-president; **H. D. Goulden,** director of scientific research and standards; **Henry Etsch,** assistant secretary; **Hugo Mock,** counsel; **Gail B. Selig,** associate counsel.

CORRECTIONS: The "Tish" box illustrated on page 116 of the May issue should have been credited to the Acme Folding Box Co., Inc., New York City. On page 108 of the May issue the manufacturers of Flint Hollow Ground Cutlery was inadvertently given as "Ecko." This should have read Ecko Products Co., Chicago.

Almost every day in the year a MODERN PACKAGING *sound motion picture is telling the story of packaging to an audience somewhere in the United States. Last year the two films currently in circulation were shown 271 times, to 88,645 persons. The service is free. Bookings may be arranged through our Film Booking Department.*

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F.C.C. *DipCord*
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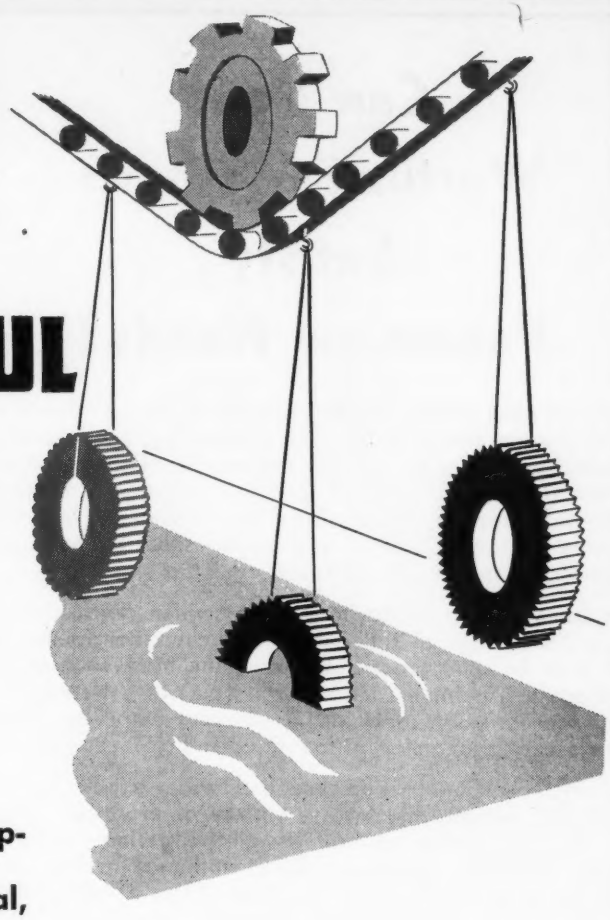

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F.C.C. *DipCord* is listed as an approved Ordnance packaging material, meeting Grade A specification requirements for Military Parts packaging. Its non-wicking property assures metal parts, which are dipped in ethyl-cellulose compounds, freedom from moisture and corrosion. F.C.C. *DipCord* is strong and tough.

F.C.C. *DipCord* is available in a number of gauges for dipping light or heavy parts.

Send for samples—mention weights of parts to be dipped.

FIBRE CORD

(Division Kary-Safe Paper Bag Co., Inc.)

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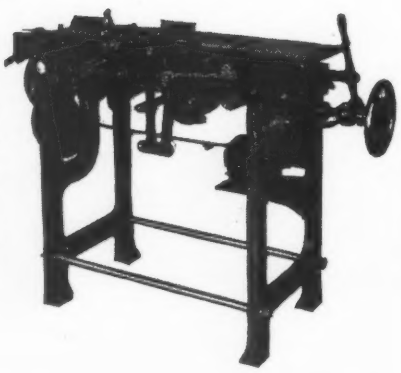
Today the big problem in most plants is to meet all demands made by the armed forces. No excuses go, because lives depend on ability to "deliver the goods" at a given time. Often these demands call for extravagant use of hand labor in operations better suited for machines. Thus, frequently setting up cartons and closing them by hand are necessary to meet a war schedule, even tho expensive.

We hope it will not be long until civilian production is again "the order of the day." The chief considerations will then be high production, using the most economical methods and minimum labor cost. You can get such performance in your cartoning department only by using labor-saving, economical carton set-up and closing machines.

The PETERS organization has had wide experience in providing such machines for a variety of products. Why not let us suggest ways and means of lowering your cartoning costs and increasing your overall profit? Just send a sample of each size carton you expect to use, and recommendations will be sent to you promptly.

This PETERS JUNIOR CARTON FORMING AND LINING MACHINE sets up 35–40 cartons per minute, requiring only one operator. After the cartons are set up, they drop onto a conveyor where they are carried to be filled. If you desire to handle several sizes of cartons, machine can be made adjustable.



This PETERS JUNIOR CARTON FOLDING AND CLOSING MACHINE closes 35–40 cartons per minute requiring no operator. After cartons are filled, they enter machine on conveyor and are automatically closed. Can also be made adjustable to handle several different size cartons.

PETERS MACHINERY COMPANY
GENERAL OFFICE AND FACTORY
4700 RAVENSWOOD AVENUE, CHICAGO, ILL.

Handling orders . . .

(*Continued from page 129*) the various departments.

Another drug company has installed a combination checking and packing table and bins, with a low conveyor in back to move the packages to the chute that takes them to the shipping platform. The packing table has eight bins, so that checkers and packers can work independently; it has enabled the company to handle a 40% increase in volume without additions to the staff and with fewer errors and breakage.

Another company recently built several four-wheel trucks for use in the checking and packing department. At the time the order is checked, the checker places the merchandise in an individual truck, rather than in bins on the packing table as previously. The benefit of this change is twofold: (1) it eliminates the possibility of the checker placing the merchandise in the wrong bin and (2) it relieves the former congestion and the resultant confusion of the orders on the packing table.

Effect of light . . .

(*Continued from page 144*) to take advantage of their screening effect in the shorter wave-length region. All twelve of the daylight fluorescent lamps were on during these exposures.

As may be seen in Fig. 5, the peroxide value had increased only a few tenths on the light-treated specimens even after 345 time units' exposure. Their spectrophotometric absorption properties likewise showed practically no change whatever and this was also found to be the case in the ultraviolet region.*

The peroxide values increased progressively on the air-blown samples, as was to be expected. Their absorption characteristics also exhibited a marked change in the visible region as can be seen in Fig. 6. No particular change, however, took place in the ultraviolet region, as was the case with the light-exposed specimens.*

Summary

1. Even light of very high intensity has no significant effect on the peroxide development of "white" all-hydrogenated vegetable shortenings. Strong light, however, does cause a flavor and odor change which is by no means characteristic of rancid fat.

2. When determining the effect of light on shortenings in the laboratory, it is essential that the artificial light source have very nearly the same energy characteristics as solar light, at least down to 325 millimicrons.

3. Light between 325 and 500 millimicrons is much more effective in promoting odor and flavor changes in "white" shortenings than the longer visible wave lengths.

4. Certain amber colored glass jars almost completely nullify the influence of light on the flavor and odor of shortenings. Green and blue colored jars are helpful, but much less so than amber glass ones. Although appearing substantially opaque, opal glass jars are of little value in minimizing the effect of light.

5. Even strong light modifies the absorption properties of

* More recent tests in the latter range, however, do not confirm this.

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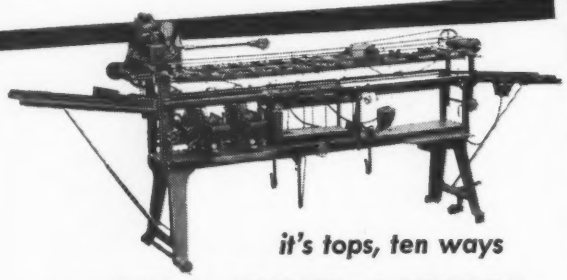

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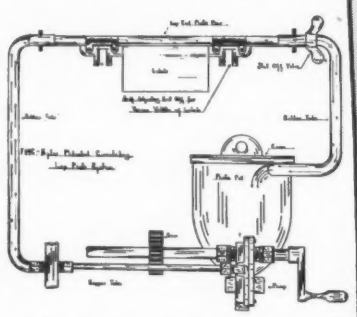
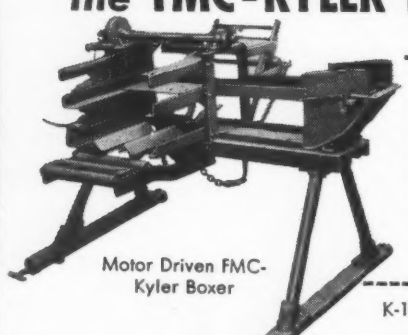


Circulating Lap-End Pasting System

the FMC-KYLER BOXER



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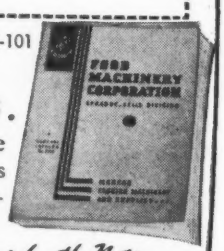

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liquid "white" shortening very little in the visible light range.

6. Air-blowing liquid "white" shortening at an elevated temperature causes the absorption to increase perceptibly in the blue end of the visible spectrum.

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[1] Coe, Mayne R., *Oil & Soap, 15:* 230–6 (1938). Coe, Mayne R., *ibid., 16:* 146–7(1939). Coe, Mayne R., *ibid., 18:* 241–7(1941). Greenbank, G. R., and Holm, G. E., *Ind. and Eng. Chem., 25:* 167 (1933). Greenbank, G. R., and Holm, G. E., *ibid., 33:* 1058–60 (1941).

[2] Morgan, Willard L., *Ind. and Eng. Chem., 27:* 1287–90 (1935).

[3] Powers, J. J., and Esselen, W. B., Jr., *Ceramic Industry, 39:* 36–38 (1942).

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Determining shelf life . . .

(***Continued from page 140***) cereal varies widely depending upon the season, upon the section of the country in which the package is placed, and, to a lesser extent, upon the hygroscopic properties of the product itself.

Acknowledgment: The authors are indebted to T. R. Roberts for work in setting up and performing many of the calculations.

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1937 Permeability of membranes to water vapor with special reference to packaging materials. Miscellaneous Publication M-127, National Bureau of Standards, August 5.

Halladay, J. F.
1942 An engineering approach to solution of packaging problems involving moisture vapor resistance. *Paper Trade Journal* **115,** pp. 153–162.

Food containers . . .

(***Continued from page 105***) lophane Division, E. I. du Pont de Nemours & Co., Inc.

Said Mr. Wendler, "established prewar films will return, with improvements, in most of the prewar channels." New type films with improvements beyond those now generally known will become available as standard commercial materials and will find logical markets, he added, but it is likely that the newer films will broaden the field of transparent packaging materials instead of resolving themselves as competitive to the previously established types which were gaining popularity postwar.

"The characteristics of the materials available in the prewar era were reasonably well understood by the food technologist," Mr. Wendler pointed out, "particularly those wrappings which had been on the market for a considerable period of time, such as cellophane, cellulose acetate, metal foils and various types of functional papers."

Technical progress in the development of new transparent films "has been very rapid," he said, but "it is very questionable if they have yet reached a state of perfection either from the standpoint of technical characteristics of the material itself, their commercial production on a large scale basis, stabilized cost to the consumer or, more important to the food technologist, their commercial application to the products contemplated being wrapped."

Such films as "Butacite" polyvinyl acetal resin, casein,

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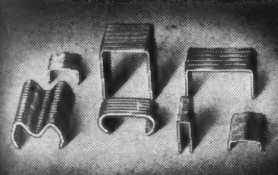

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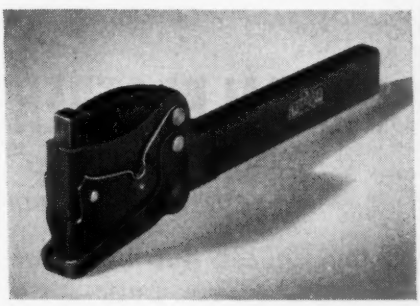
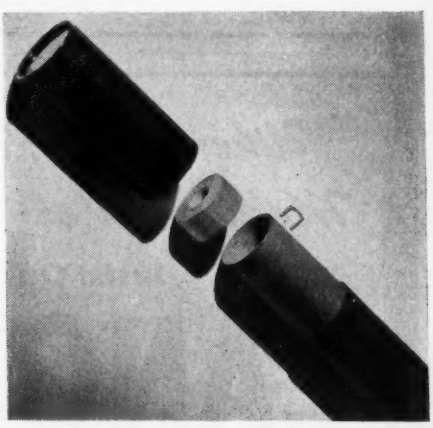
Yet some of the "miracles" were performed merely through the application of some commonplace packaging principles. One such case is described on this page.

The photograph below shows how this shell container is constructed. An internal collar into which the nose of the shell is fitted, is stapled to the inner tube of the container. In some cases, a single staple is sufficient to hold the collar securely in position.





The tool used is the Bostitch Self-Feeding Hammer, which drives a staple like a two-pointed tack, delivering a powerful driving force with only a short wrist motion. Each stroke drives a staple as fast as the operator can swing.

This and many other cases in the files of Bostitch wartime applications illustrate the importance of *protective* packaging. Military authorities recognize that a delivery is successful only if the shipment arrives in usable condition; it is safe to predict that, for ordinary commercial purposes, more and more attention will be paid in the future to protective packaging.

And since the successful package is the one that combines protection with *efficiency*, it is also safe to predict an increasing use of Bostitching. In addition to providing a fastening which, in many cases is more secure and resistant to the hazards of rough handling and weather, Bostitching often offers a time saving over other fastening methods. For further information we suggest you send your fastening problem—an actual sample, if possible—to Bostitch for study and recommendation.

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ethyl-cellulose, methyl-cellulose, nylon, polythene, polystyrene, polyvinyl alcohol, rubber derivatives, starch films and vinyl copolymers were listed in the group of newer transparents.

Sounding a note of warning regarding the choice of wrapping materials for food packaging, Mr. Wendler said, "Don't be too quick to draw conclusions on the ideal wrap or the advisability of change, as there are many items which should be given full consideration before any new permanent adoptions are made."

Choice should be based upon results obtained from fairly extensive tests made upon commercially wrapped packages of the product itself and should not be based upon the characteristics of the wrapper alone even though its properties may appear on the surface to be ideal for the particular product, he warned.

"It is the combination of product and wrapper which determines the applicability of the packaging medium to a given use," said Mr. Wendler, adding that "many an erroneous conclusion has, in the past, been drawn due to this lack of proper testing procedure."

Questions and answers

(*Continued from page 146*) specification, it is more than likely that this can only be met by the use of a material which is under strict control.

The only possible material which can be used as a waterproof adhesive and coating and which it is not under any controls, is asphalt. Asphaltic materials can be formulated in such a way that they can be used to combine many materials such as paperboard, metal foils, etc. Other formulations can be used to obtain surface coatings or impregnations which are completely waterproof and free of surface tack at the usual temperatures. However, all of these asphaltic materials have one common disadvantage and that is the fact that they become brittle at temperatures approaching zero and lose their adhesive power and become sticky in direct exposure to sunlight.

There are some asphaltic blends and mixtures which have greatly improved characteristics at low and high temperatures, but these are obtainable from very few companies and are difficult to obtain because in many cases the improved properties are obtained by the addition of synthetic resins which are on allocation.

Briefly, the answer to the question would be that all of the superior waterproof and coating materials are difficult to obtain and will remain so until war demands have slackened.

Those materials which can be readily obtained, such as asphalts, will not meet high performance requirements of many of the service uses.

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JAN specs . . .

(*Continued from page 127*) barriers. In future packaging design, it is hard to see how this interdependence can fail to be recognized and maintained and it is for this reason as well as their importance in war packaging that the JAN material specifications warrant close scrutiny. To avoid the pitfalls of prophesying present or future relative importance, they will be discussed here in alphabetic sequence.

JAN-P-101 covers water-resistant adhesive suitable for V- and W-board containers prescribed in JAN-P-108. It is based on Ordnance Tentative Specification AXS-1074, which was issued shortly after these new boards were made available. The need for a water-resistant adhesive specification is self-evident: ability to resist exposure to rain and high humidity is fully as important in the sealed closure of a box as in the box material itself. JAN-P-101 is designed to do exactly this job. The specification covers two types—Type I, suitable for application on automatic case-sealing equipment; Type II, suitable for hand application by brush—and two grades—Grade A, suitable for fibreboard containing no asphalt; Grade B, suitable for fibreboard having one or more layers of asphalt. Performance requirements are the same for all types and grades. All must show not less than 75% fibre-failure after 24 hours' immersion in water when adhered fibreboard strips are forced apart. Furthermore, they must retain this minimum fibre-failure and in addition show 100 p.s.i. shear strength after 24 hours' exposure to the following conditions: 140 deg. F. with maximum 20% relative humidity; 75 deg. F. with 50% relative humidity; and minus 40 deg. F.

While certain suggestions have been advanced to improve JAN-P-101, particularly with respect to the preparation of samples for the shear-strength and fibre-failure tests, indications from the field are that adhesives meeting its requirements have performed in a highly satisfactory manner. That the specification has not proved impractical from a production point of view is best evidenced by the latest list of satisfactory materials, which includes over 100 proprietary brands. As long as the Armed Services or industry find a need for water-resistant fibreboard boxes, the types and grades of adhesives covered in JAN-P-101 will be indispensable accessories.

JAN-P-121 (Barrier Material; Greaseproof) and its predecessors, Ordnance AXS-840 and Aeronautical AN-P-12, have probably had a more profound effect on the science of packaging than any other Material specification in the series. Around these specifications has grown a whole new industry, producing something over 20,000,000 sq. yds. of finished material every month. The functions of these barriers are to keep in place the preservative coating applied to a metal surface and to protect the coating against contamination by dirt, dust, or other foreign matter. It must therefore be "greaseproof"—that is it must prevent absorption or "run-off" of the preservative from the part. Also, it must be in and of itself non-corrosive. Finally, it must have definite strength properties to prevent abrasion or rupture during application and packing and these properties must be maintained against the deteriorating effect of exposure to high temperatures.

Greaseproof barrier-materials are divided into two grades, A and C. Grade C has all the properties of Grade A and is in addition moldable and self-adhering. These two extras, usually accomplished by wax treatment, are included to make Grade C materials suitable for Method I-a conforming wraps

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and container overwrap applications as defined in JAN-P-116.

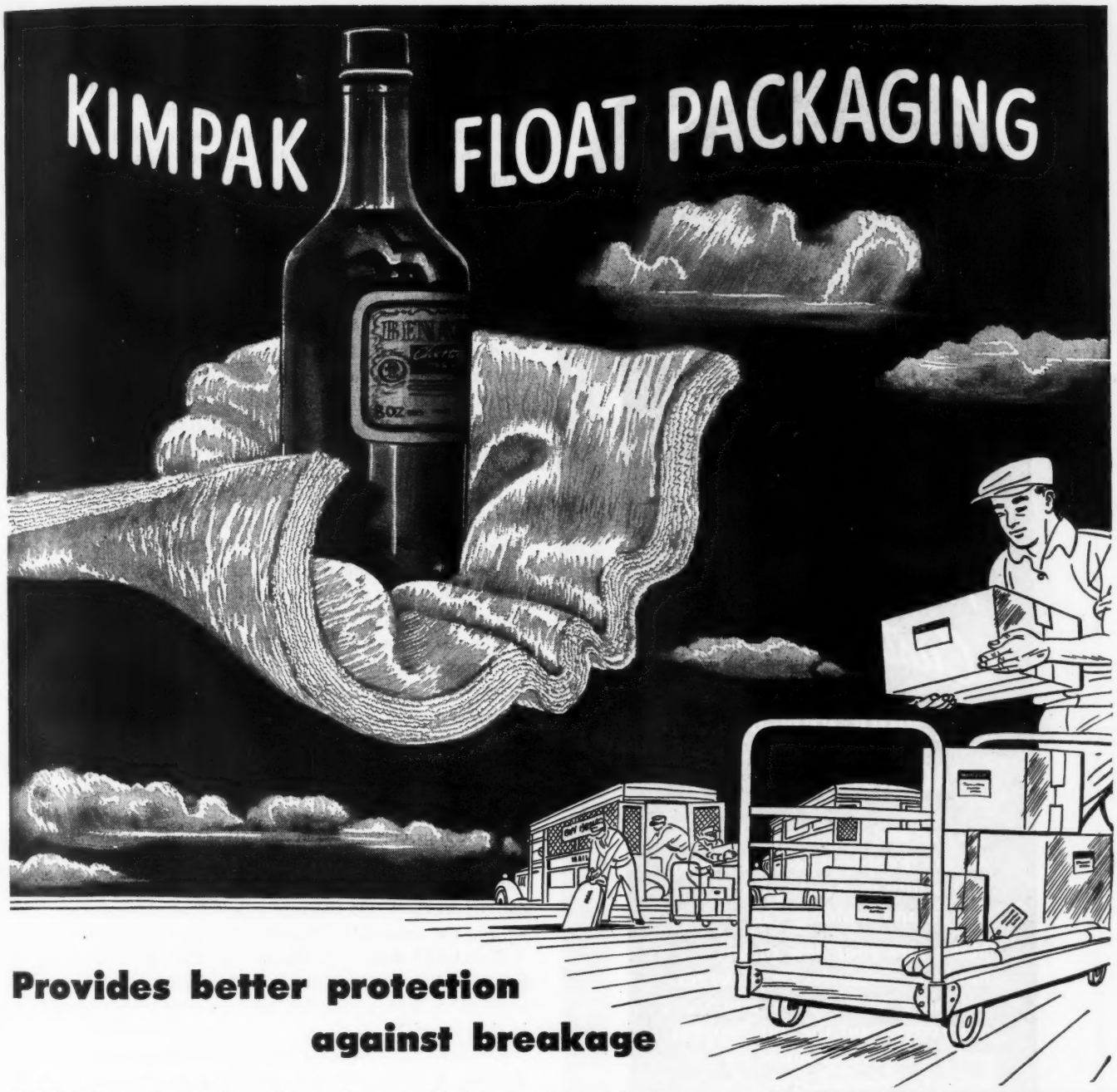
Greaseproofness is measured by resistance to the passage of turpentine through creased samples of the material. The minimum resistance time is 900 seconds in JAN-P-121, which is three times the resistance prescribed in previous specifications. Actually this severe increase is simply recognition of the improved performance of most of the sheets being made today.

Non-corrosiveness is still controlled, as in previous specifications, by limiting free acid content to 0.02% equivalent sulphur trioxide maximum and by requiring a pH range of 6.5 to 7.5.

Strength properties are covered by Mullen and tear tests and, for convenience in selection of suitable material for specific uses, three types are prescribed for flat sheets. Type I is Heavy Duty—70 lbs. minimum Mullen, 125 grams minimum tear resistance for Grade A, 425 grams for Grade C. Type II is Medium-Heavy Duty—40 to 69 lbs. minimum Mullen for both grades, 40 minimum grams tear for Grade A and 175 for Grade C. Type III is Light Duty—20–39 lbs. minimum Mullen for both grades, 12 minimum grams tear for Grade A, 25 for Grade C. Since experience has shown that stretchable materials—i.e., those that have been creped, embossed, or puckered—offer greater resistance to puncture and tear, materials having a stretch of not less than 15% are typed I, II, or III if their Mullen and tear values are 50% lower than those prescribed for flat sheets. Maintenance of strength properties is measured by conditioning the material for one week at 140 deg. F. at the end of which the decrease in Mullen must be not greater than 15%. The "aged" material must also show no de-lamination and greaseproofness must be maintained at not less than 900 seconds.

While JAN-P-121 has served a noble purpose and done a tremendous job in the protection of war supplies, it is far from a perfect specification. Its chief deficiencies are in its arbitrary standards for the determination of non-corrosiveness and greaseproofness. In the case of non-corrosiveness, a supplementary contact-corrosion test is vitally needed and a material more akin to preservative coatings would unquestionably improve the reliability of the present greaseproof test. Both problems have intrigued the technicians of Government and private laboratories for the past two years, but we shall probably have to await a final decision after the war.

JAN-P-131 (Barrier Materials, Moisture-Vaporproof, Flexible) ranks close to JAN-P-121 in its importance among the packaging material specifications. Without JAN-P-131 we would have no control over Method II packages—and without Method II packages we could not ship safely many of the most critical items of war—electrical equipment, delicate instruments, optical devices, bomb-sights and hundreds of others. Again, it is a specification based on war needs for flexible materials that were more stable, more moisture-resistant and tougher than any in prewar commercial use. The application of dehydrating agents within the sealed barrier introduced a new complicating factor. The dehydrating agent, it was found, absorbed not only the moisture that seeped into the package but also tended to draw out the moisture in the barrier material itself, thus causing early failure from embrittlement. Furthermore, all the usual measurements of tensile tear, Mullen, permanence, seal-strength failed to provide adequate standards for moisture-vaporproof materials, because of the wide range of values found in those sheets which gave satisfactory results in the field.



Provides better protection against breakage

Cuddled in a cloud-soft cushion of KIMPAK*, bottles of liquid escape many dangers of breakage in transit. Today, KIMPAK is busy protecting a veritable host of wartime products, from delicate medical ampoules and precision instruments to huge aircraft spare parts. After victory, this versatile, resilient creped wadding will receive its honorable discharge and be ready to go to work for you on civilian products.

As flexible and easy to use as a piece of wrapping paper, KIMPAK makes possible assembly-line speed in packaging . . . saves time and work in the shipping room. Often cuts freight costs by reducing package size and weight.

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The only solution was to apply to completed packages accelerated weathering and handling tests that would simulate the most severe conditions of handling and storage. Four proved Method II package designs were selected and established as standard classes of application. Class A covers floating bag applications, in which the barrier is free of stress and strain and is held in place by bolts passing through suitable gaskets. This class is particularly adapted to larger items such as radial engines, machine guns and electrical panels, which can be safely and securely bolted to wood or metal bases. Class B covers Container-Barrier-Container applications, in which the sealed barrier is protected against rupture or abrasion by inner and outer fibreboard containers. Since this class of application is more likely to cause stresses and strains in the barrier than Class A, barriers are tested under different loads—5, 10, 30 and 40 lbs.—to determine the maximum permissible weight of contents.

Class C is for container-overwrap applications. This class of application is in effect the container overwrap Method I-a technique and differs only in the insertion of a dehydrating agent within the container to make it a legitimate Method II package. Generally speaking, all Grade C, Type I greaseproof barrier materials and several Grade C, Type II have successfully met the requirements for Class C, provided of course, that they were properly sealed and given a coating of dip-sealing compound.

Class D is for Cushioned-Item Bag applications. This is the simplest of all applications, involving only the cushioning of the part or item, insertion and closure of the bag. The specification limits the use of Class D applications to a maximum contents weight of 5 lbs.

In accordance with the provisions of the specification, the prospective moisture-vaporproof barrier-material supplier may elect to submit his product for qualification under any of these four classes. The performance requirements for all are the same. The first step is to calculate the moisture-vapor transmission rate using the so-called General Foods cabinet method. If the rate is less than 0.05 gram per 100 sq. in., the material is classified as Type I; if it is between 0.05 and 0.15 gram, it is classified as Type II; and if it is between 0.15 and 0.25 gram, it is classified Type III. If it is more than 0.25 gram, the services just aren't interested in the material.

Packages are then prepared in accordance with standard designs; a predetermined load and a quantity of desiccant, calculated on the type-classification, is enclosed and the barrier is sealed. The completed package is then subjected to a rough-handling and cyclic exposure test. This test is based on JAN-P-116 but is prolonged to include two eight-day cycles, with a 30-day exposure to 130 deg. F. and 60% relative humidity interposed between the cycles. If the pick-up in moisture by the desiccant during this whole period exceeds 15%, the barrier is considered unsatisfactory.

This is surely a back-breaker among specifications—and yet its validity in field performance has been proved again and again. Moreover, no less than 14 different materials have passed the test, not counting the Grade C, Type I greaseproof barriers for Class C application. Basing its evaluation entirely on the performance of completed packages, it sets no limit on technical ingenuity to produce cheaper, better materials. Plastics, foils, papers, asphalt, textiles—all have an equal opportunity, alone or in combination, and because of its versatility there is an infinite range of perishable and delicate products needing Method II protection to which it can be applied.

JAN-P-130 (Barrier-Material; Utility, Non-corrosive)

SPEAKING OF *Protection . . .*

When your products dive into the sea of competition, it's comforting to know you have given them every safeguard against air, moisture, grease and odors. You can be *sure* you have if your product is packaged in a FLAV-O-TAINER—the patented duplex bag that is heat sealed on all seams. Remember that name when you want *unusual protection.*

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. . . will later be available in the following Royalflex films—SELLOFLEX, which is Cellophane laminated to itself or to other appropriate material; LUMIFLEX, aluminum foil laminated to another appropriate material; PLIOFLEX, pliofilm laminated to itself or appropriate material; DUOFLEX, moisture proof coated glassine laminated to itself.

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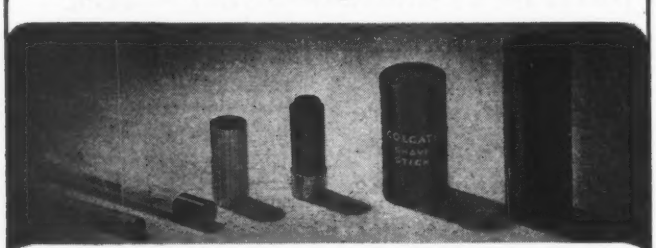

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covers a barrier that is a relative new-comer in the field of basic packaging material. It is designed to provide control for a type of wrapper widely used by the Engineer Corps, who had dubbed it a "Grade BE." It has also had a wide usefulness in the Method II aircraft-engine pack.

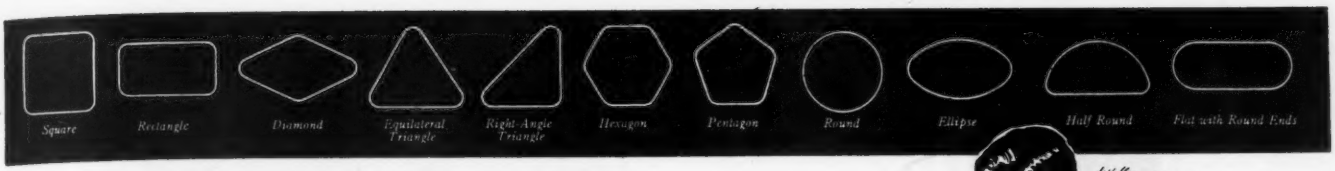
Utility barrier material is actually a link between cushioning materials and greaseproof wraps. Materials are typed on the basis of weight, flexibility and tensile strength. Tensile is the most significant factor and is pegged at a minimum of 35 lbs. for Type I, 30 lbs. for Type II and 25 lbs. for Type III. All types are subject to the same pH and free acidity control as JAN-P-121 materials. These materials are ideal buffers to prevent abrasion of delicate exterior wraps, particularly moisture-vaporproof barriers, by sharp projections or edges. Since they are not greaseproof, they cannot be applied in contact with surfaces preserved with an oil or grease-type coating. Being non-corrosive, however, they can be safely applied directly on plated or painted surfaces, or on surfaces treated with the thin-film, hard-drying types of preservative compounds.

Being one of the newest of specifications—approved as recently as Jan. 31, 1945—and having had no equivalent preceding specification, the list of materials conforming to JAN-P-130 is extremely limited. It is bound, however, to be referenced in future procedural-type packaging specifications and instructions and it is expected that its publication will stimulate the development of many new combinations.

JAN-P-125 (Barrier-Materials; Waterproof) ranks close in importance to JAN-P-121 and JAN-P-131 among the packaging material specifications. Since water—in vapor or liquid form—has been the greatest enemy of the safe shipment of war supplies, these materials in one form or another, are used in virtually every package shipped overseas—as coverings for bales, as wraps for domestic cartons packed in wood boxes, as case liners for boxes and panel liners for crates, as covers for asphalt-treated crate tops, as shrouds over machines and equipment packed in crates or boxes, wraps to protect moisture-vapor and greaseproof barriers, as components for greaseproof-waterproof bags and water-resistant paper tapes—wherever, in fact, it is necessary that water "be included out." In addition to these strictly packaging uses, waterproof barrier materials, especially the reinforced types, have been used by the millions of square yards as a substitute for canvas tarpaulins to cover supplies stored in the open in the Aleutians, the Tropics, Europe and Africa. For all these multifarious purposes, the Armed Services consumed no less than 300,000 tons of waterproof material during the past year.

The requirements for waterproof barriers first appeared in Section XXV of the Army-Navy General Specification 100-14a; 39P16, which served as the basis for Federal Specification UU-P-271a. Both industry and the services, however, found serious objection to these specifications; types were merely described without sufficient control tests—and there were too many of them; the specifications limited acceptable materials to specific compounds and combinations thereof; and the applicability of various types for specific end-uses was inadequately prescribed. The first attempt to overcome these deficiencies was Ordnance Tentative Specification AXS-1246. The JAN specification is based largely on AXS-1246 but includes additional types to cover a broader range of application.

The basis for JAN-P-125 is still suitable combinations of asphalt and paper. The specification makes it clear, however, that combinations of materials other than asphalt and paper will be acceptable, provided they meet the performance



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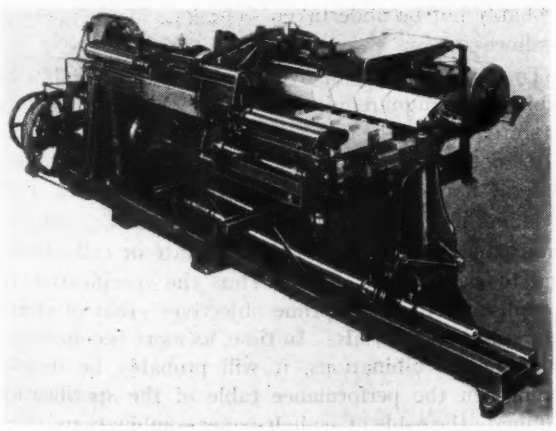
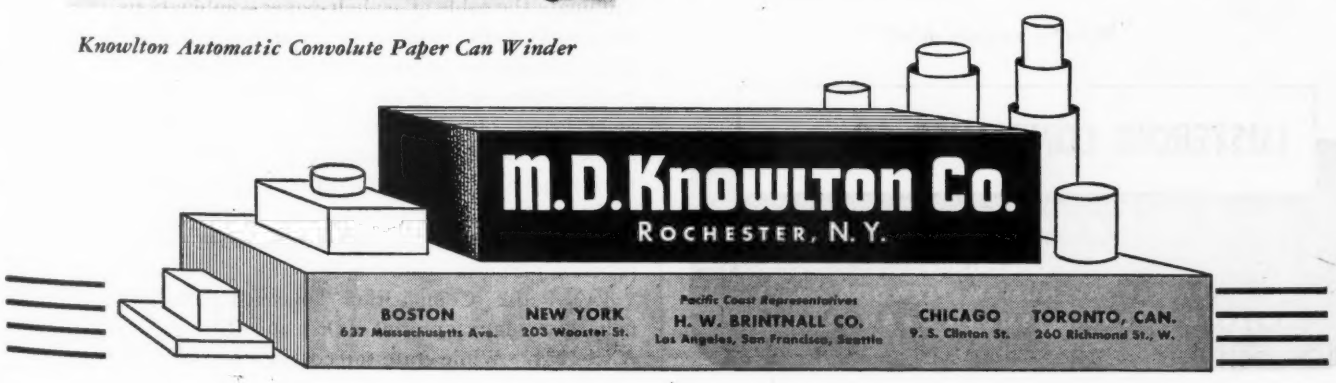
Millions of trade-marked products are delivered to industrial, commercial and household consumers in Knowlton-machine produced paper cans. With Knowlton Paper Can Body Machines, manufacturers can produce a variety of designs of unquestioned eye appeal. Also change-over from critical material to paper can be easily made. As an example of the versatility of the Knowlton Automatic Convolute Paper Can Winder, 1 to 5 paper can bodies can be made and labeled at one time, shaped for either paper or metal ends.

Second to no other machine is the Knowlton Spiral Tube Winder which produces low cost paper cans and cores (2 to 21 plies) of unusual strength and high quality.



Knowlton Automatic Convolute Paper Can Winder

Services of Knowlton engineers are always available to help you in your packaging production problems.



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requirements of the specification, and such other tests as may be deemed necessary to establish the effectiveness of the combination for specific end-uses. The specification covers some 15 basic types, each of which is tied to one or more specific end-uses. Performance tests prescribed depend on these end-uses. Thus, sheets designed for interior wraps (such as Type C-1) must have maximum flexibility as measured by an ingenious piece of equipment, which determines the weight needed to form a 180 deg. fold in the sheet. In addition, they must have a minimum tensile of 20 lbs. per in. width in the weaker direction and must be sealable by adhesives, tapes, heat or other suitable means.

The case-liner types (E-2, H-1, 2, 3 and 4, L-2 and M) must also have good flexibility and be sealable. Their strength characteristics depend on tensile alone (for Types E-2, L-2 or M) and on a combination of tensile and stretch for the H sheets.

Since case liners are subject to the most severe exposure conditions, the specification further stipulates that on Type L-2 and H-3 materials the outer sheet shall be treated, coated or impregnated with asphalt or other water-resistant material or shall be a wet-strength kraft. Lack of a treated outer sheet is compensated for in Type H-1, H-2 and M by requiring that they be composed of three plies of paper, and in Type H-4 by requiring 120 lbs. of asphalt laminant per ream. Since for certain case-liner applications a reinforced material is desirable, provision is made that Type E-2 shall be reinforced with "cords or strands of fibre running in any 2 directions and averaging not less than 20 cords or strands per ft."

As in AXS-1246, JAN-P-125 provides that the water-resistance be determined on samples that have been creased in two directions, using the TAPPI dry-indicator method. The value is 12 hours for all types except B-2, which is a lightweight, stretchable baling material. On the basis of the performance of virtually all sheets, with the possible exception of the reinforced grades, this value could be raised to 24 hours. However, increasing difficulty is being experienced in obtaining satisfactory base-sheets and an upward revision will probably not be undertaken so long as low porosity kraft is in short supply.

To maintain control over asphalt-paper combinations, a table of minimum requirements for each type is included, but, as stated above, the inclusion of this table in the specification does not preclude consideration of other combinations. Several non-asphalt materials are now on the Ordnance products list, including combinations of wax and paper, of wax, paper, cloth and cellulose acetate or cellophane films; and of asphalt and cloth. Thus the specification has accomplished one of its prime objectives—that of stimulating new suitable materials. In time, as more becomes known of these new combinations, it will probably be desirable to strengthen the performance table of the specification and eliminate the table of asphalt-paper combinations, or at least relegate it to the notes section where it will provide information only and not serve as a basis for rejection. It may also in the future be desirable to establish minimum MVTR's on some types. In the meantime, however, the services have found the specification valuable and effective. The suppliers have responded by manufacturing greatly improved sheets—and those who prescribe their use in package designs have found in these types a material suitable for almost any waterproofing purpose.

JAN-P-102 (Composition Topcoating Materials, Bituminous) is virtually a reprint of Ordnance Tentative Spceification AXS-1231. While crate-top coatings had been used by some

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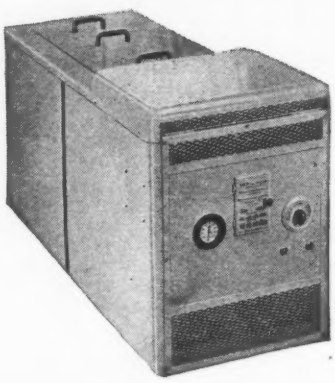

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The YM Plasticoater is a simple, self-contained, thermostatically controlled unit for applying hot dip coatings of ethylcellulose — or other plastics — to metal parts.

Design provides uniform temperatures, accurately controlled for best dipping conditions — no danger of overheating plastic.

Continuous movement of plastic — by pump action — prevents film formation — bubbles are immediately removed. Constant dipping level is maintained.

The Plasticoater meets Army and Navy requirements for overseas-shipment protection of metal parts . . . has wide potential postwar use in corrosion protection of tools as well.

Units are built in sizes with melting capacities ranging from 3 to 100 pounds per hour. Write for full details.

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export-shippers prior to the war, it was soon found that the products available were highly unpredictable in their performance. The function of a crate-top covering is to provide a waterproof roof on skidded crates and very large boxes. This function is totally destroyed if the coating material becomes brittle and strips off, or softens and runs off, or is inelastic and cracks when the roofing boards shrink. This last requirement has become particularly important due to the increasingly high moisture content of lumber available today for packing purposes.

JAN-P-102 provides resistance to run-off by requiring that paper panels coated with the material be subjected to a temperature of 60 deg. C. for 24 hours "without run-off, spreading, or excessive staining through the paper." To determine resistance to embrittlement at low temperatures, the same treated panels are conditioned at 0 deg. F. for one hour and then bent 180 deg. around a one-inch mandrel. Any resultant checking, cracking or separation from the paper is considered cause for rejection.

Measurement of the ability of the material to bridge gaps between boards proved more of a poser. It was found, however, that the so-called "blown" asphalts have this characteristic to an entirely satisfactory degree, provided they have penetration values of not less than 35 at 32 deg. F., 85 to 100 at 77 deg. F., and not more than 200 at 115 deg. F.

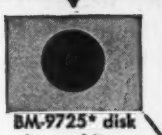
The combination of material and performance has been avoided wherever possible in preparation of these packaging material specifications. In this case, however, the combination appears to be justifiable. At any rate, industry has found little difficulty in producing acceptable materials—there are now some eleven suppliers on the Ordnance list—and even more significant, no case of failure in the field has been reported. It is a safe presumption that JAN-P-102 will have wide application in postwar export packaging, wherever large crates are used and it should also be of interest for a host of other applications where an economical and efficient waterproofing material is required.

JAN-P-115 (Compound, Dip-Coating, Sealing) is inseparably linked with Grade C greaseproof barrier materials, wherever they are used in Method I-a packaging. The wrapping supplies greaseproofness, non-corrosiveness and a measure of moisture- and waterproofness. The dip-sealing compound supplements the wrapper by providing a highly impervious coating that will resist cracking and run-off through a temperature range of minus 10 deg. to 130 deg. F.

This specification is also based on a preceding Ordnance specification—AXS-1015—and differs little from it. It was originally contemplated that the dip-coating compounds would require a high percentage of micro-crystalline wax, even though no restrictions were imposed on the material to be used. Recognizing, however, the critical wartime shortage of wax, suppliers have been unrelenting in their search for more available substitutes. So successful have they been that today not a pound of micro-crystalline wax is being allocated to the production of dip-coating compounds and yet the industry has never failed to meet all military demands.

While Grade C wrappers will probably always require JAN-P-102 to meet the requirements for a Method I-a package, there is no reason why the reverse should be true. Particularly for container-overwrap applications, the services would welcome the development of hot-dipping or even cold-dipping compounds that will in and of themselves provide a tough, impervious, economical barrier capable of withstanding the Method I-a and II cycling and rough-handling tests. Some work, principally with asphaltic and rubber-type ma-

TYPICAL USES OF ROGERS-BORDS



BM-9725* disk for molding

3G443 back for binder

BAYRU cut for midsole

KAYGREY jewel box pieces

ROYALGREYinsulator for transformer

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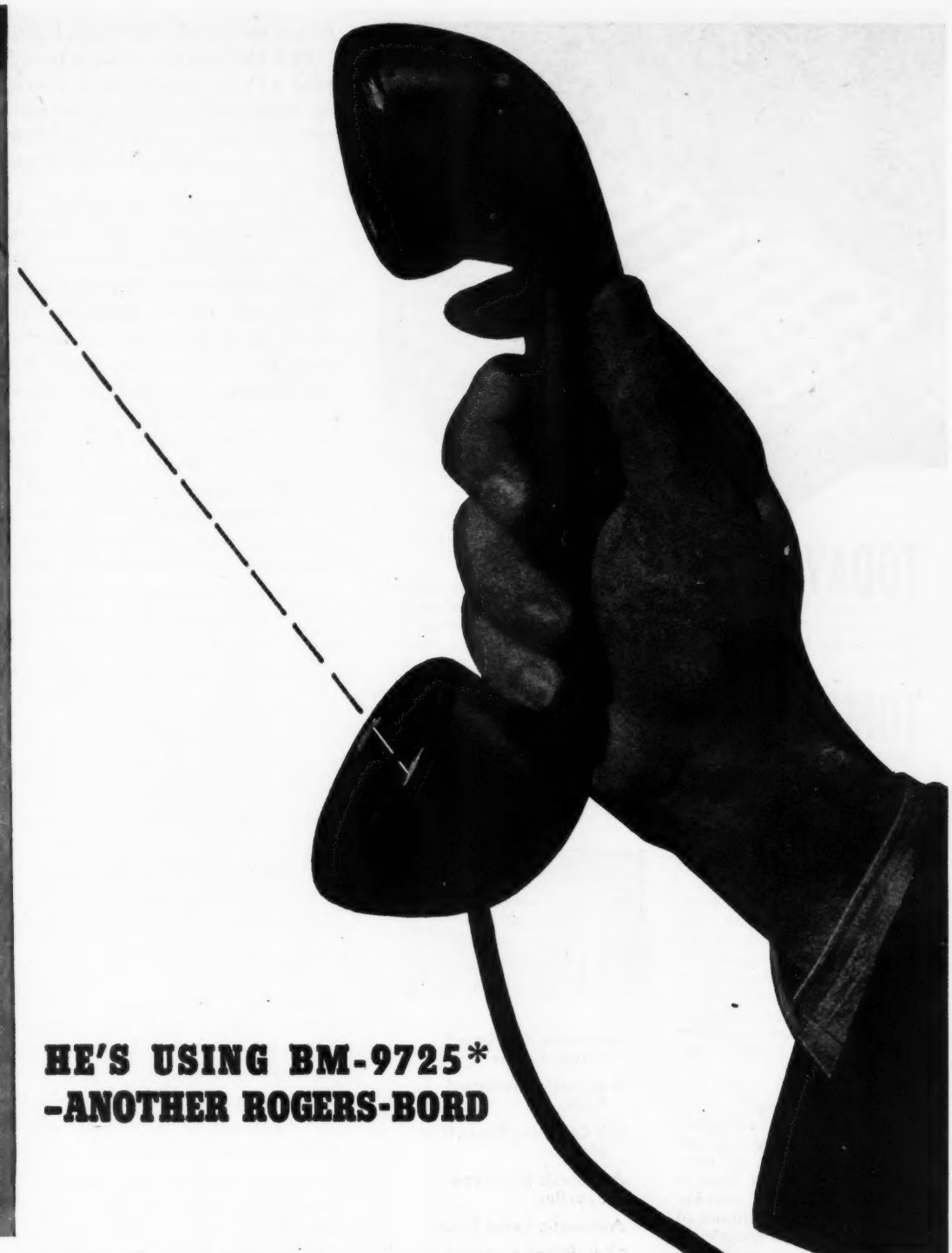
XM-15000E cap for canteen



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The cookies and wafers can be stacked and arranged in countless ways in cartons, boats, U-boards or flat cards. The U-boards and cards are automatically folded and fed onto the conveyor. And to the wrapper of each package a bright diecut label from a roll is automatically coded and heat-sealed.

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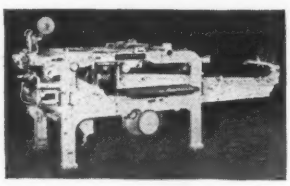

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terials, has already been done, but the field is still wide open.

JAN-D-169 (Desiccants) is to moisture-vaporproof barriers what JAN-P-115 is to Grade C wraps. No Method II package is complete unless enclosed within it is a supply of desiccant adequate to absorb the moisture within the package at the time of sealing and the moisture that will seep in through the barrier.

In many respects, the specification requirements and test procedures are still closely akin to those in the original Army-Navy-Aeronautical Specification, AN-D-6 and other desiccant specifications among the other services. As in AN-D-6, the specification covers desiccants for all types of application (including refrigeration and mechanical dehumidifiers) and again Type V covers the grades suitable for packaging. The specification does, however, introduce some fundamental changes. Following the patterns of Revision 1 of Ordnance Specification AXS-778, JAN-D-169 no longer confines acceptable materials to silica gel, but opens the field to any desiccant that will meet the prescribed performance tests. Since the moisture adsorption capacity of suitable types of desiccant varies widely on a weight basis, the specification provides adsorption curves for three distinct grades: Grade A is intended to cover materials with the capacity of silica gel; Grade B adsorption capacity curves are somewhat lower than Grade A and provide control over activated clay-type materials; Grade C has the lowest adsorption capacity curves and covers activated bauxite-type materials. Translated into terms of protection, application formulae in JAN-P-116 require that $1^1/_2$ lbs. of Grade B and 2 lbs. of Grade C be used to provide protection equivalent to 1 lb. of Grade A. This apparent disadvantage in the case of Grades B and C is compensated by their higher density which permits packing $1^1/_2$ lbs. of Grade B in the same size bag required for 1 lb. of silica gel and 2 lbs. of Grade C in a bag only a third larger. Lower production costs have also tended to equalize the differences in adsorptive capacity and to put them on a more nearly competitive basis.

There is one other important change in JAN-D-169 that should be mentioned: Substitution of a minimum chloride content and a low pH test in place of the previous corrosion test. While, as in JAN-P-121, an actual corrosion test is the more desirable method, great difficulty has been found in writing a test that was reproducible among all laboratories and on which all technicians and inspectors could agree in their readings. Under the closest of controls, even the best of materials show some corrosion and nobody has found a foolproof method of determining what is a permissible amount of corrosion. By exchange of data among the principal laboratories concerned, however, it has been found that those materials with a water soluble content of less than 0.30% and a pH of less than 8.0 invariably give satisfactory performance in the field, and so the services, temporarily at least, have agreed to accept only those desiccants with these water-soluble content and pH limits.

(The concluding installment of this article, including discussions of the new specifications for strip coating and adhesive tapes, will appear in the July issue.)

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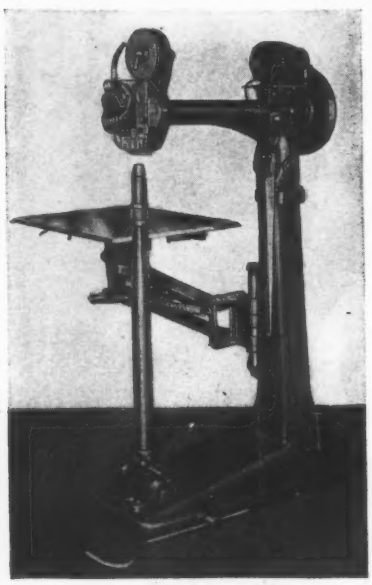
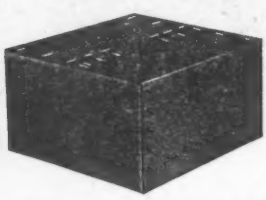


Set Up for Bottom Stitching



BLISS TOP *and* BOTTOM STITCHER

Corrugated or Solid Fibre Containers Are Stitched Both TOP and BOTTOM on This STITCHER

TOP and BOTTOM Stitched Containers are now specified for packing numerous products. On this Stitcher the bottoms of containers may first be wire stitched, then filled and the tops sealed with wire stitches.

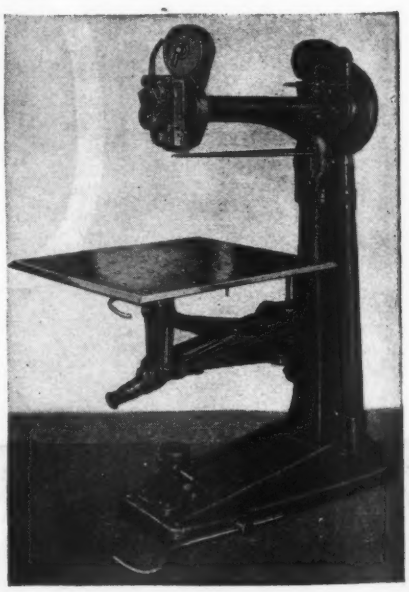
The illustration at the left shows the machine set up for bottom stitching of containers.

For top stitching of filled containers, the post is removed and table and blade anvil swung into position as illustrated at right. Less than one minute is required to make the change.

The counterbalanced table is quickly adjustable for varying heights of boxes.

Built in two sizes, with 15" and 25" throats and 26x30" work table. Handles boxes up to 25" in depth. Standard Bliss Heavy Duty Stitcher Head is used. Motor ¼ HP.

Wire Stitching both top and bottom provides a uniformly secure closure and gives added strength and rigidity to the case.



Set Up for Top Stitching

Write for further information.

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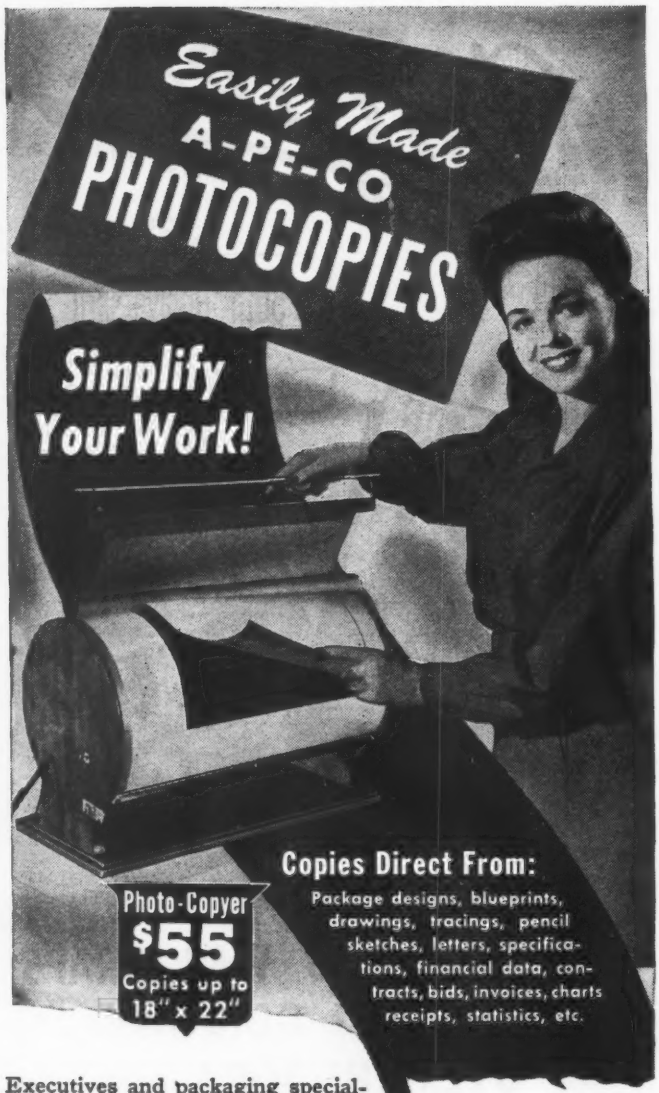

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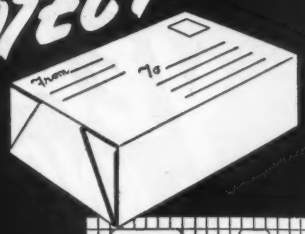

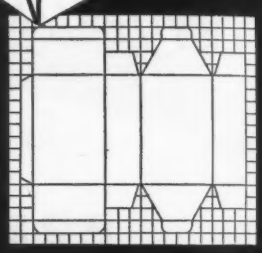

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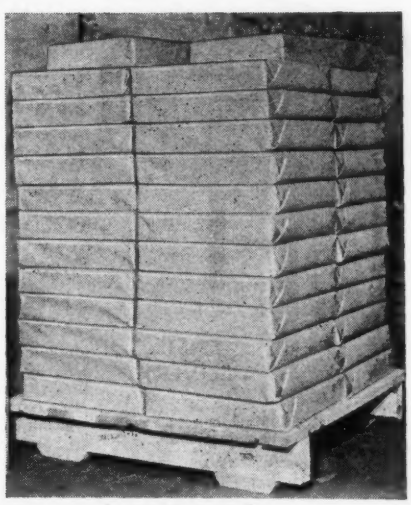

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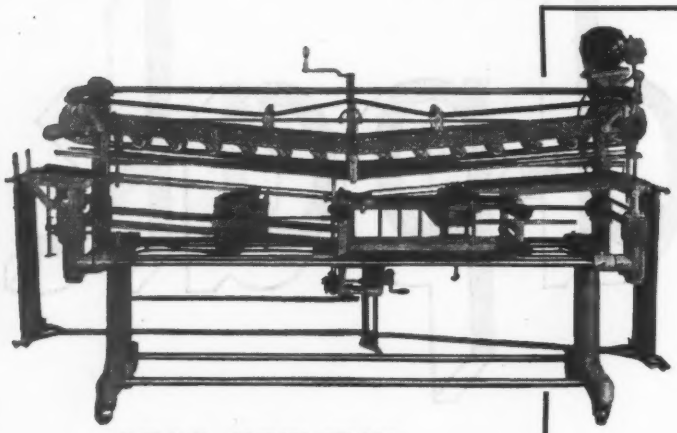

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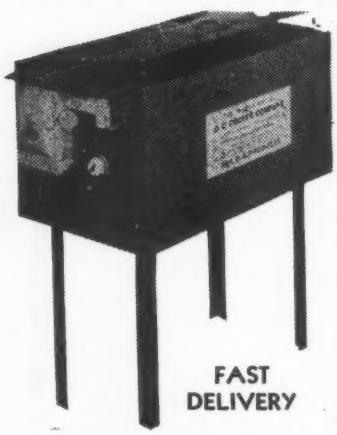

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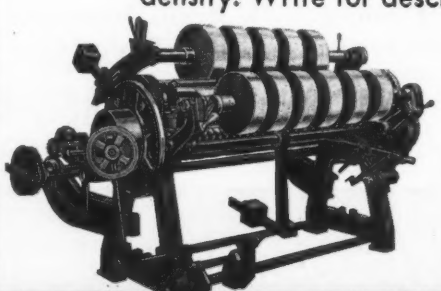

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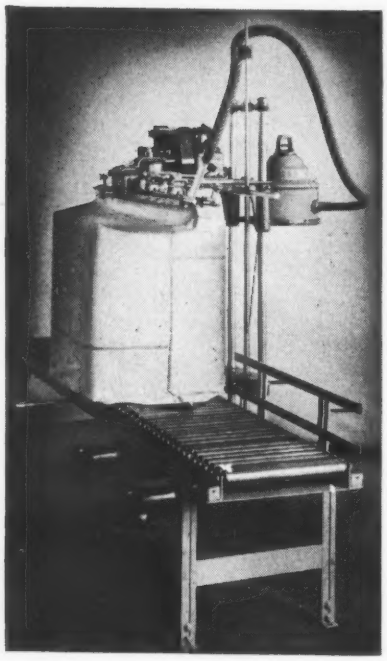

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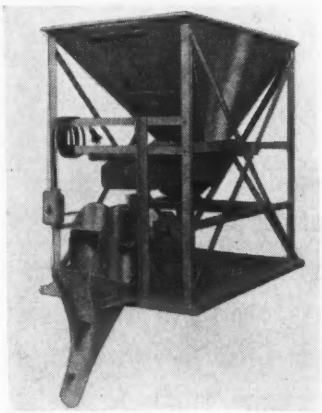

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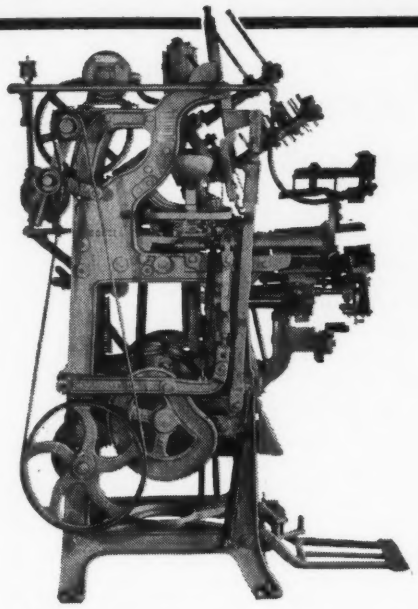

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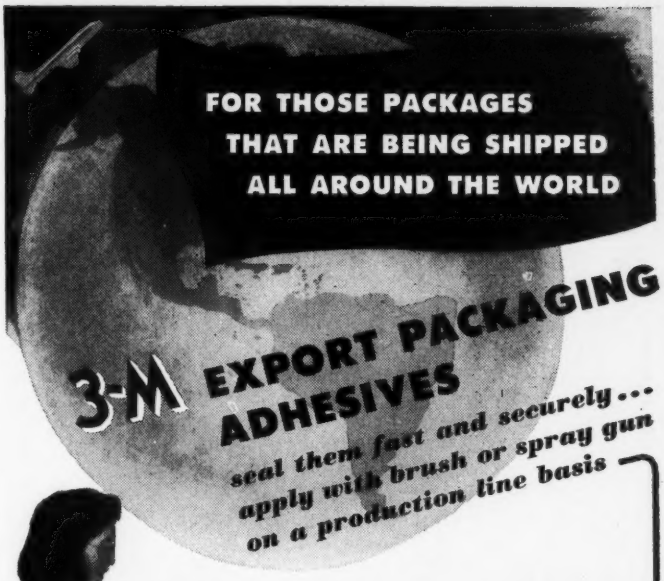

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seal them fast and securely... apply with brush or spray gun on a production line basis

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GENERAL OFFICES: SAINT PAUL 6, MINN.
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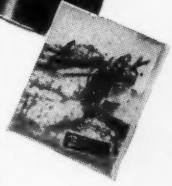

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Miller

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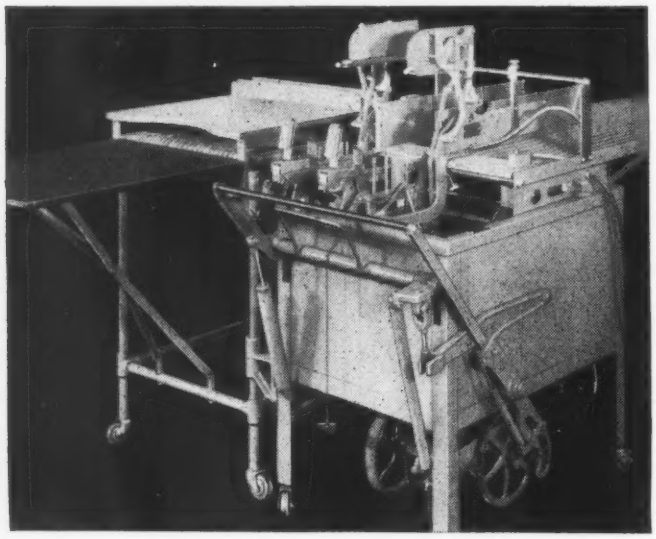
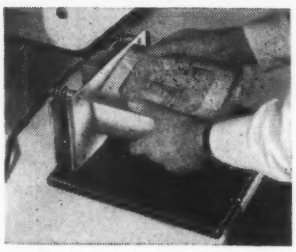


Speedily and economically wraps packages in many sizes. Cuts its own wrappers from cellophane or paper rolls. No tools needed to adjust. One girl is all you need to operate or adjust either the heat-sealing or glue-sealing models. Mounted on casters, the MILLER Model MPS can be rolled to the job. Plugs into any wall outlet for power. Send us samples of your packages. We'll quickly give you complete information on this versatile, dependable wrapping machine.



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Heat seals bags, cartons or other packages in MST cellophane, waxed, or thermoplastic coated papers. Ideal for trays or window boxes. Non-corrosive stainless steel and aluminum construction makes it perfect for use in quick freeze plants, locker plants and other damp locations.

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MAIN OFFICE AND FACTORY:
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Telephone: Newtown 93

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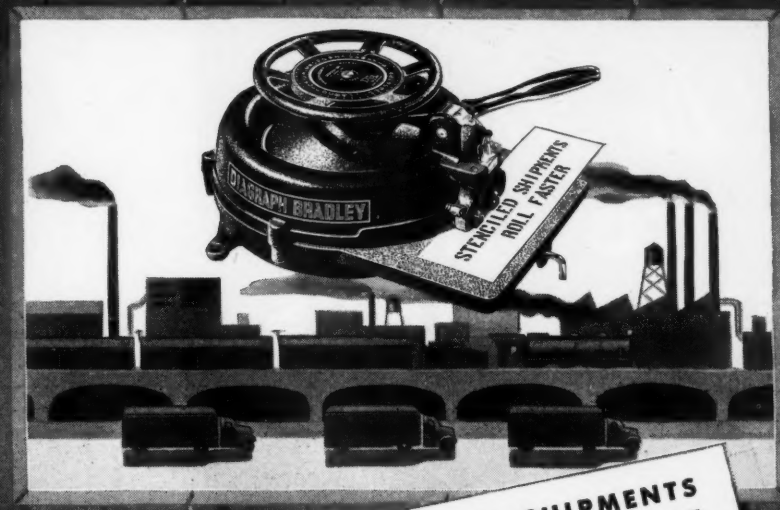

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STENCIL MARKED SHIPMENTS WITH EASILY READ, PERMANENT STENCILED MARKINGS—roll faster and costly delays in transit are eliminated.

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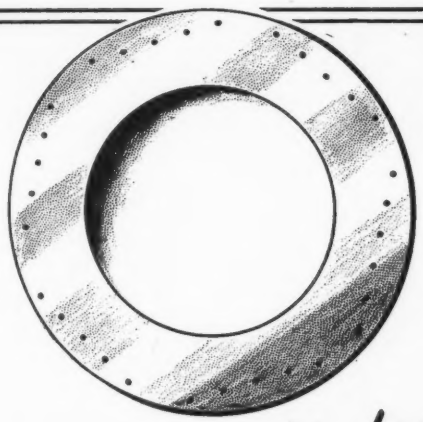

You can't beat this drum!

This revolving drum doesn't take a beating—it gives one! Containers given a ride in it undergo the kind of treatment they get in transit. This is just one of the scientific tests we use to determine the strength of containers and the efficiency of packing methods. Perhaps we can help you with your shipping problems.

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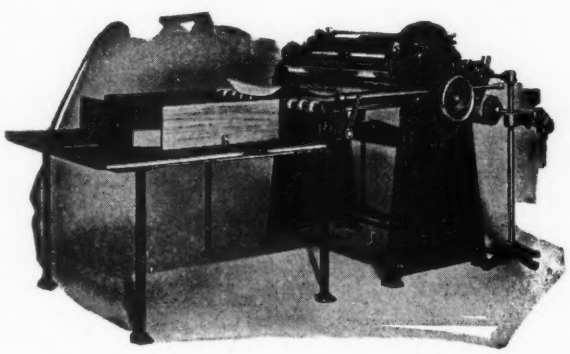

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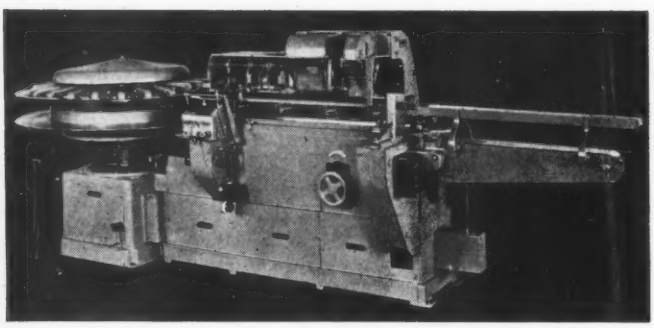

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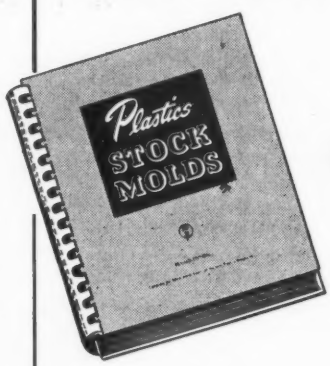

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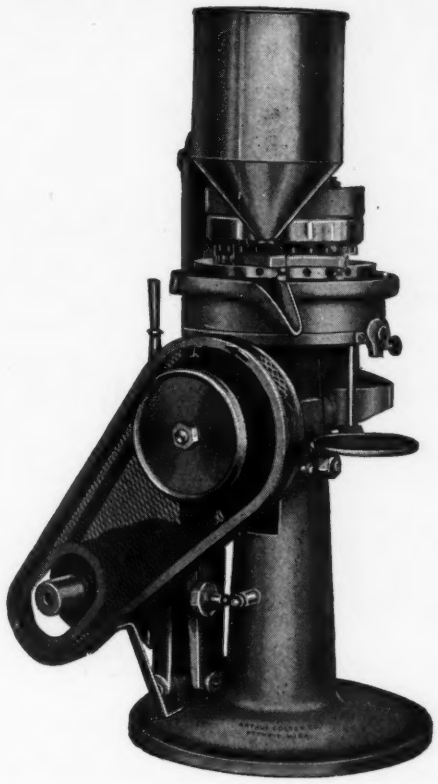

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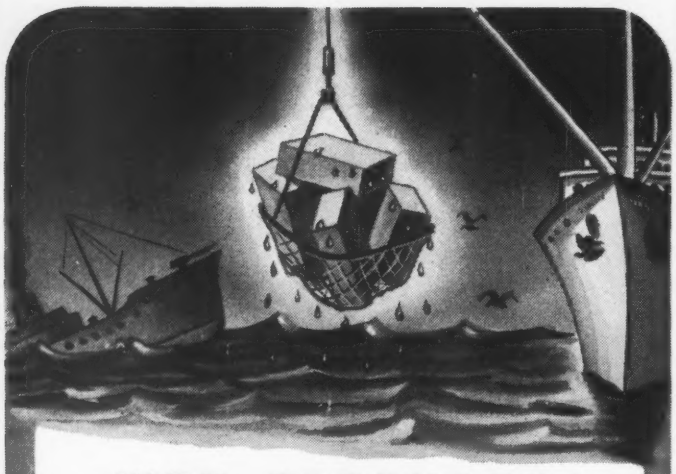

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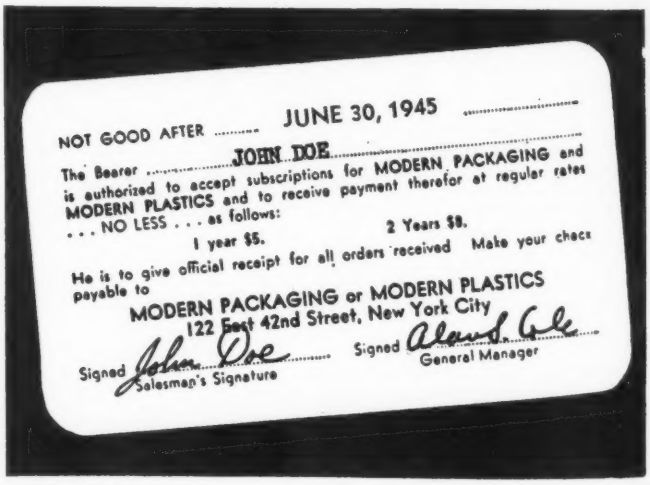
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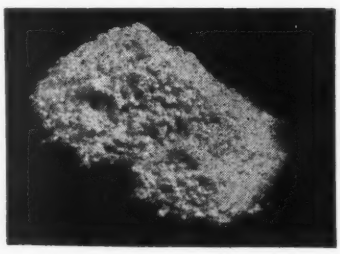

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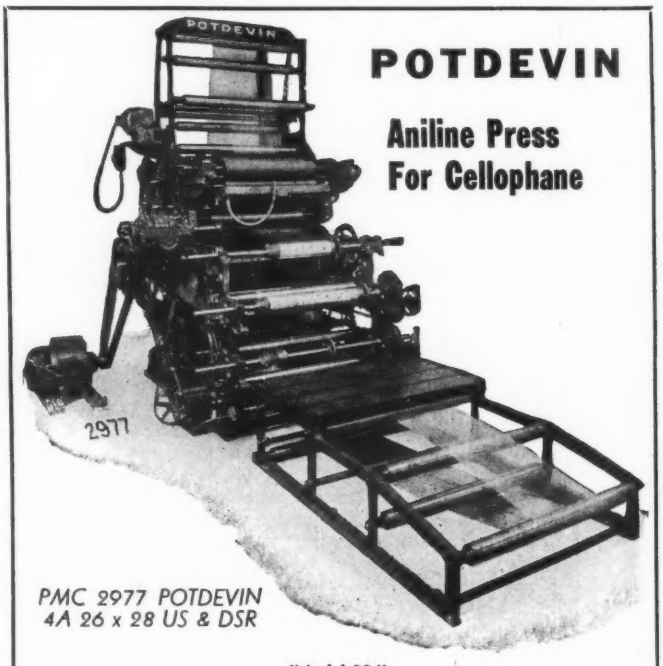

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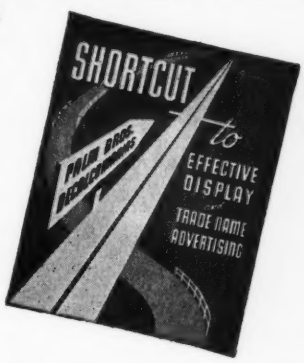

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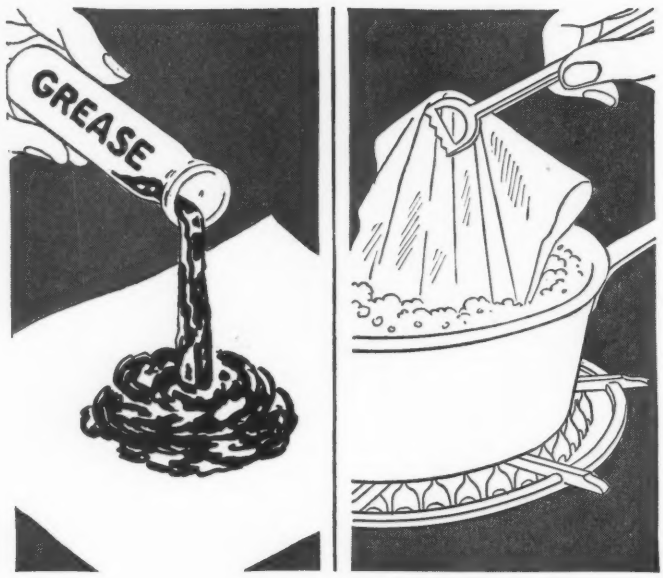

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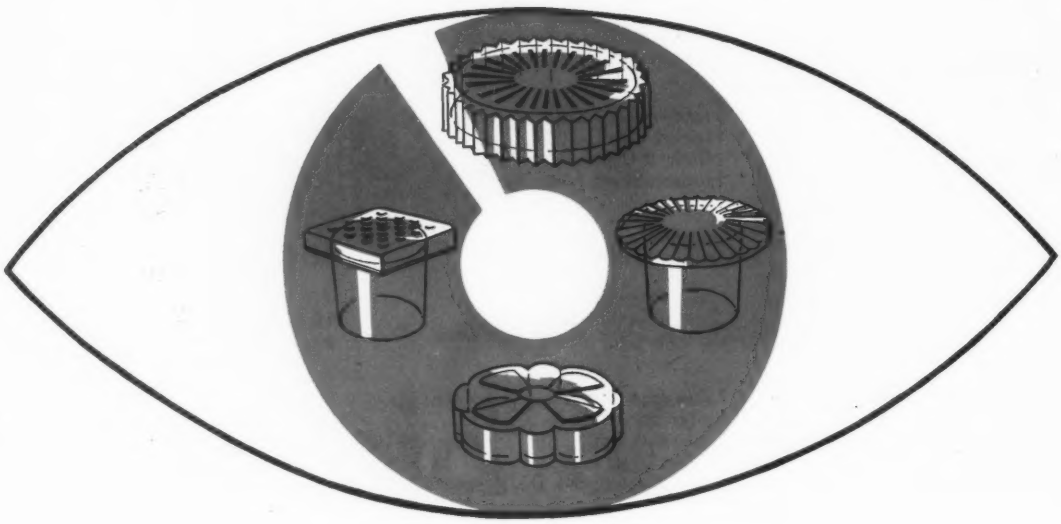
LUSTRON

makes better stoppers for shoppers



Eye-appeal . . . that's what stops shoppers for a second look, and opens their purses.

And that's what makes Lustron, Monsanto's polystyrene, a favorite for *decorative closures.*

Consider these eye-appealing reasons why style-wise designers and manufacturers select Lustron for that "significant trifle" . . . the closure to their product:

1. Gem-like, lustrous surfaces.
2. Full color range . . . from sparkling transparent, through delicate pastels, to rich opaques.
3. Easily molded to quality, custom designs.

Then consider, too, Lustron's *practical* advantages:

1. Costs less per pound than any other thermoplastic.
2. Can be molded by fastest, most economical methods.
3. Light weight . . . lower shipping costs . . . more units per pound.
4. Lustron does not affect the merchandise . . . is odorless, tasteless, contains no volatile plasticizer.
5. Likewise, alkalis, alcohol, and all but the strongest oxidizing acids, do not affect Lustron.
6. Dimensional stability. Lustron closures fit, and keep their fit.

Manufacturers who want to give products for mass selling the sales boost of quality appearance . . . Molders who are interested in active molding items in their plants, will both want to investigate Lustron for beautiful decorative closures.

Complete information and technical assistance may be had directly from: MONSANTO CHEMICAL COMPANY, Plastics Division, Springfield 2, Massachusetts.

MONSANTO PLASTICS

SERVING INDUSTRY . . . WHICH SERVES MANKIND

VUEPAK TRANSPAREMT PACKAGING MATERIAL TRADE MARK

The broad and versatile family of Monsanto Plastics includes: Lustron polystyrenes • Cerex heat resistant thermoplastics • Vinyl acetals • Nitron cellulose nitrates • Fibestos cellulose acetates Thalid for impression molding • Resinox phenolics • Resimene melamines • Forms in which they are supplied include: Sheets Rods • Tubes • Molding Compounds • Industrial Resins • Coating Compounds • Vuepak rigid, transparent packaging materials.

Cartons With Greater Protection and Beauty . . .

. . . OUR POSTWAR JOB

Michigan CARTON CO.

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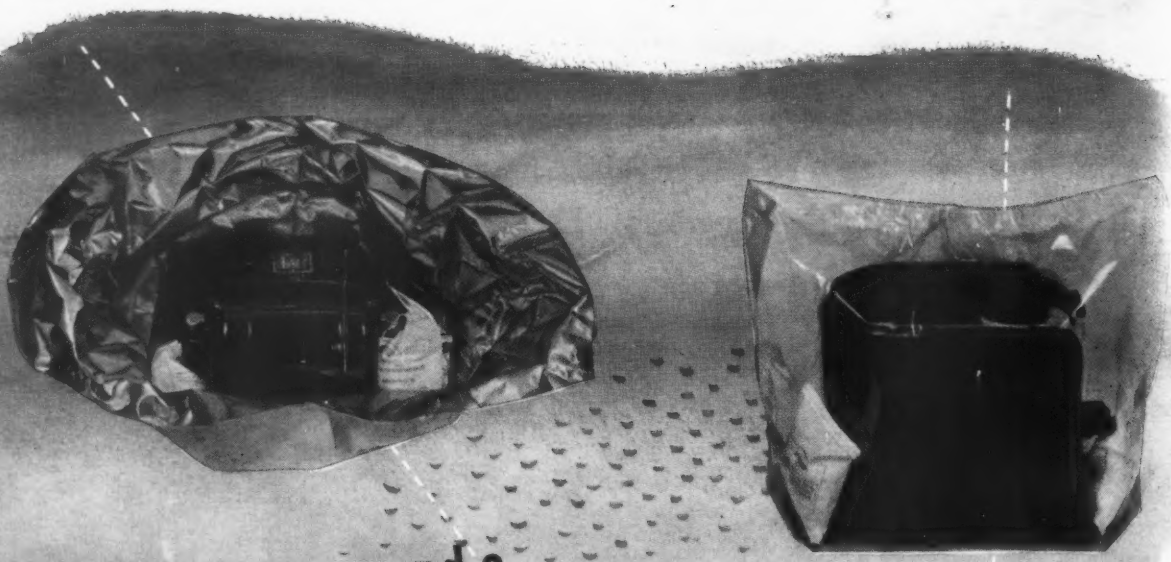
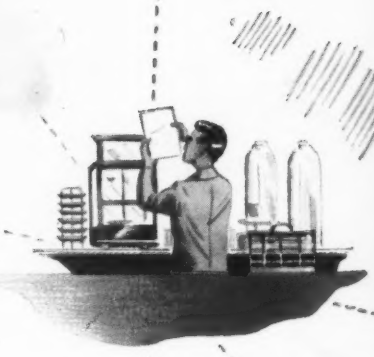


WAR has made a science of packaging . . .



In meeting the wartime need for packages that would safely protect food and mechanical equipment during overseas shipment and long periods of storage in every climate, the laboratory became the most important department in our plant. From this laboratory came many of the war's most outstanding protective packages. As these packages are converted for peacetime use, the importance of the laboratory will be increased. For here the technical research, the testing and evaluation of materials and products, will insure the most successful package for every product. Our technicians are ready now to work with you in the development of a truly scientific package. Why not submit your packaging problem today?

SHELLMAR Products Co.

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